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*Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society*

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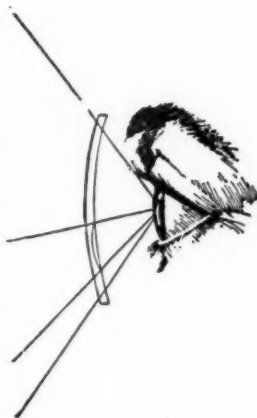
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## THE USE OF TANNIC ACID IN BURNS OF CHILDREN\*

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*Detroit, Michigan*

THE profound metabolic disturbance following a severe cutaneous burn has been the subject of extensive laboratory and clinical investigation. Theories have been offered that the reaction of the body to a thermal insult is due to a disturbance of one or another of the various functions of the skin, namely, respiration, excretion, sensation, or heat regulation. Others have attempted to explain the phenomenon observed on the basis of alteration in the blood, such as destruction of red cells by heat, concentration of the blood, inability to take up oxygen, stasis in the large vessels, and extensive thrombosis. The clinical course which follows such injuries cannot be attributed to interference with any of the functions of the skin, nor can it be ascribed to the known changes in the blood. These may be contributing factors, but in themselves they do not adequately explain the sequence of events which take place.

### TOXEMIA THEORY

There is certain convincing evidence that suggests the formation at the site of the burn of a toxic substance, the absorption of which is responsible for the constitutional reaction. Reiss succeeded in isolating from the urine of burned patients a substance which was toxic to animals. Vogt observed that when parabiosis was established between two animals and one was burned, the other showed evidence of toxemia. Pfeiffer isolated cleavage products of protein decomposition from burned skin which were toxic. Robertson and Boyd have also demonstrated the toxicity of the products of protein autolysis of burned tissue. They further showed that the toxin cir-

culated in the blood. Bardeen observed degenerative changes in the liver, spleen, kidneys, and bone marrow in a series of lethal cases. He further noted a general edema of all lymphoid tissue, which was most marked at the germinal centers. He concluded that the findings were best explained on the basis of an acute toxemia. Weiskotten and Olbrycht arrived at the same conclusion, but emphasized the degenerative changes in the adrenals. Of the various theories presented, therefore, that which attributes the constitutional reaction to absorption of some toxic substance or substances from the burned area is more strongly supported by the available evidence.

These facts suggest that the rational manner of combating the toxemia would be some form of local treatment which would prevent absorption from the site of the burn. Debridement has deserved a certain amount of popularity, but its application is limited by the severity of the procedure. Douglas attempted to retard the process of absorption by the use of the vaso-constrictor—adrenalin. Others have attempted to lessen the toxemia by the use of continuous tubs, hoping to remove the toxic material as promptly as it is formed. These methods have been efficacious to a certain degree, but have not altered the toxemia materially.

### TANNIC ACID

It would seem that the rate of absorption might also be greatly lessened, if the tissue devitalized by the burn were exposed to a protein precipitant which would hold the decomposition products out of solution. Tannic acid accomplishes this purpose in forming more or less stable compounds with the burned tissue, which are relatively insoluble and are held upon the surface

\*From the Department of Surgery of the Children's Hospital of Michigan, Detroit, Michigan. Presented before the annual meeting, Minnesota State Medical Association, Duluth, July 16, 1930.

instead of being absorbed into the general circulation. The precipitated proteins on the surface treated provide a protective coating against chemical, bacterial, and mechanical action as well as against sensory stimulation (Figs. 1 and 2).



Fig. 1. Case 1. Showing an extensive second and third degree burn of a child aged three years. The parchment-like covering is insensitive. Maintenance of dryness minimizes infection.

#### ETIOLOGY

The importance of the problem of burns in children is evidenced by the fact that 45 per cent of the lethal burns occurring annually in the United States, are in children under six years of age. In 62 per cent of the cases admitted to the Children's Hospital of Michigan during the past three years, the burn was due to someone leaving a pail of hot water unprotected (Figs. 3, 4, and 5), the filling of a bathtub with hot water, and the child falling into it, or due to a child pulling a kettle of hot water, soup or coffee from a stove, spilling the contents over itself (Figs. 6 and 7). This suggests that over 60 per cent of the mortality and morbidity of burns in children is definitely avoidable, and due to the negligence or carelessness of someone in leaving a pail of water unprotected or filling a bathtub with very hot water and waiting for it to cool, instead of drawing it at the desired temperature, or permitting a child to play around a stove on which something is cooking.

The second important causative factor is playing with matches or around a bonfire. Twenty-five per cent of our cases were of this origin.

Although boys and girls are similarly dressed during the first three years of life, more boys die of burns than girls. This may probably be attributed to the more venturesome spirit of boys which exposes them to greater danger. Statistics of the Metropolitan Life Insurance Company, covering a period of over twenty years, show that in the fourth year of life the relatively higher death rate of females from burns begins. The

margin increases from five to nine years, when more than twice as many girls as boys die from this cause. This may probably be attributed to the type of clothing worn, because at all ages the morbidity is greater in boys.

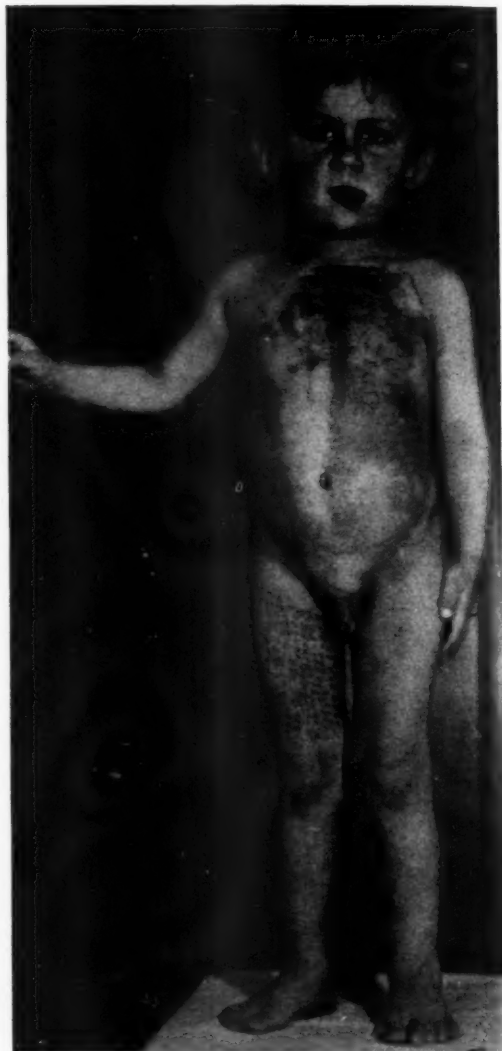


Fig. 2. Case 1. Healing complete seven weeks after the injury. Pinch grafts were applied to upper chest. Thigh shows area from which grafts were cut.

#### PROGNOSIS

Several important papers have recently been published giving statistical data about the change in mortality from burns in children since the adoption of the tannic acid method. Harris has reduced the mortality from 26.6 per cent to 12 per



cent at the Sick Children's Hospital of Toronto. Herzfeld has reduced the mortality at the Royal Edinburgh Hospital for Sick Children from 38 per cent to 9 per cent. Beckman has reported

of death in all lethal cases before and after the introduction of the method now used, rather than from a study of the gross mortality percentages. This plan has been adopted.



Fig. 3. Case 2. Showing the characteristic lesion resulting from a child backing into an unprotected pail of hot water. These burns are generally of the second degree unless infection destroys the small islands of epithelium.



Fig. 4. Case 2. Healing complete three weeks after the accident.



Fig. 5. Case 3. Showing a third degree burn resulting from backing into a pail of water. This area was grafted in the presence of infection and the wound was not dressed for six days. A satisfactory take is shown.



Fig. 6. Case 4. Showing a second degree burn resulting from pulling a kettle from the stove. Child aged eighteen months.



Fig. 7. Case 4. Showing final result, four weeks later.

a reduction of the mortality at Bellevue Hospital from 27.8 per cent to 14.9 per cent. Because of the great variation in the severity of burns admitted from year to year, it would seem that a better index of the progress made would be obtained by the study of the time and cause

The prognosis in any given case of a burn in childhood must be guarded because of the profound metabolic upset which may occur. It has been stated that an adult may tolerate a burn involving one-third of the total body area and a child will tolerate one involving only one-seventh

of the total cutaneous area. It has further been stated that in regard to prognosis the extent is of more importance than the depth of the burn. This statement is true for immediate mortality,



Fig. 8 (upper). Case 5. Showing a very extensive third degree burn of a child aged six years. Bands about four inches in width were grafted in stages starting on the chest and working downward. Finally each flank was grafted. Sufficient grafts were obtained from legs.

Fig. 9 (lower). Case 5. Showing final result 103 days after the accident. Illustration reproduced from the 1929 Detroit Proceedings of the Inter-State Postgraduate Medical Association of North America.

but it is certainly not true for ultimate mortality in children.

The depth of a burn is determined by the temperature of the agent and the duration of the

contact with the skin. It is well established that thick skin, as on the palms of the hands, offers a greater resistance to heat than the softer, more delicate skin of the protected parts of the body. The same applies to children, where the skin of the entire body is thinner, of softer texture, and more delicate than that over corresponding parts of the adult body. Accordingly, an intensity of heat applied to the skin of a child for a given increment of time may cause a third degree burn, while the same thermal stimulus on the thicker, more resistant skin of an adult may cause only a first or at most a second degree burn. For this reason, large, deep burns are seen frequently in children from what appeared to be a relatively slight thermal trauma. This may leave a large granulating wound which is very badly tolerated early in life, and is of grave prognostic significance (Figs. 8 and 9). Unless prompt epithelization is accomplished by skin grafting the picture of exhaustion develops and various complications occur. In the adult this problem does not arise, because the granulating wound is well tolerated and grafting is a simple procedure which may be done under local anesthesia. In children, the matter is a serious one because delay means the development of complications, while the risk of the procedure and its attending anesthesia is considerable.

Wilson has divided the clinical course of severe burns into four stages, which are descriptive of the underlying pathology at any given time, and are exceedingly helpful in arranging a rational therapy: (1) Shock; (2) acute toxemia; (3) septic toxemia; (4) healing.

#### SHOCK

When a child receives a burn of any great extent, shock almost invariably occurs. It is exceedingly difficult to state when shock ends and the true toxemia of burns begins. The skin becomes cold and clammy, the temperature falls, the pulse becomes rapid and weak, and sensibility is blunted. Cannon has presented a rather plausible theory of shock and concluded that it is due to the absorption of autolyzed protein from the site of the injury. Crile, on the other hand, emphasizes the stimulation of the sensory nerve endings. It would, therefore, seem reasonable to assume that any drug which would precipitate the protein devitalized by the burn and stop absorption and at the same time dull the exposed

sensory nerve endings would be effective, regardless of which theory one accepts. Tannic acid is such a drug.

Our method has been to place the child in a

tannic acid every fifteen minutes until the surface is a light brown color. This is generally accomplished in about two hours.

Underhill has shown that marked concentra-

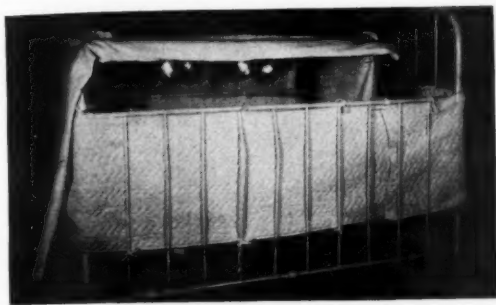


Fig. 10. Showing arrangement of bed. Sheet hung at head to protect eyes from light. Mosquito netting is shown thrown back. Lights are in position to furnish adequate heat.



Fig. 11. Case 6. Showing a second degree burn of a child three years of age. The coagulum has spontaneously separated from the buttocks, revealing complete healing.



Fig. 12. Case 7. Showing an extensive third degree burn in process of preparation for grafting. Area covered with a perforated cellulose non-adhering dressing over which compresses are placed.



Fig. 13. Case 8. Showing the wound after the area has been covered with pinch grafts. The extent of the wound into the axilla should be noted. Grafts cut from both thighs, entire back done at one stage.



Fig. 14. Case 8. Showing functional result one year later.

light tent on sterile sheets (Fig. 10). Open all blebs, carefully remove all loose tissue, and cleanse the denuded area as carefully as possible without excessive trauma. Time spent thoroughly cleansing the burn at this period minimizes subsequent infection. The burned area is then sprayed with a five per cent aqueous solution of

tannic acid every fifteen minutes until the surface is a light brown color. This is generally accomplished in about two hours. Underhill has shown that marked concentra-

cose subcutaneously, intravenously, and per rectum promptly upon admission, as well as to force fluid by mouth.

It has further been demonstrated that the



Fig. 15. Case 9. Showing the mobility of pinch grafted area with the development of a new subcutaneous tissue, which is attributed to doing the procedure early.

capillaries during this period are more permeable than normal and that blood plasma is lost into the tissues. If the burn is extensive, and it appears that shock will occur, transfusion is done in anticipation of shock and repeated if it occurs. It has been observed that these children tolerate relatively larger transfusions than those transfused for other conditions in which there is not such a great reduction of blood volume. These energetic measures have resulted in less vomiting, which materially simplifies the subsequent management. In our early experience the incidence of death from this origin in our lethal cases during the first 36 hours after the accident was 25 per cent. Although the cases of burns admitted to the hospital during the last two years have probably been quite similar in extent

and severity there has been no mortality during the first 36 hours after the thermal insult from shock.

#### TOXEMIA

Should the individual survive the initial collapse, there is a later secondary toxemia. The temperature is quite elevated, the pulse is rapid and bounding, the skin is flushed, the psychic symptoms are those of a delirium, and muscular twitching and convulsions may be present. Vomiting may make the oral administration of fluids impossible. This syndrome generally occurs about thirty-six hours after the accident and persists about eight to ten days.

It has been shown that precipitation of the devitalized tissue with tannic acid limits absorption and prevents the loss of body fluids at the site of the burn by covering it with a parchment-like protective coagulum. It has further been observed that moistening this dried material immediately releases the toxic agent and causes a profound change in the patient. Because of these facts, the patient is kept in a light tent, on sterile sheets, and nothing further is done locally. The child is turned over to the nurses, whose duty is primarily to see that the intake of fluid is adequate.

Normal saline is given intravenously or subcutaneously daily in all extensive burn cases until the period of toxemia is past. Sedatives are given freely at night to insure rest, so that the day may be fully utilized for the administration of fluids. Thirty-three per cent of the lethal cases prior to our present method of management died of this origin. Since the adoption of these measures seventeen per cent of the lethal cases have died from the toxemia of burns.

#### SEPTIC TOXEMIA AND LATE TREATMENT

It has been observed that in second degree burns the coagulum acts as a splint and healing takes place beneath it and is generally complete at the end of two to three weeks (Fig. 11). Effort made to remove the coagulum before it has spontaneously separated has invariably resulted in the escape of serum and blood with subsequent infection due to moisture. Should the precipitated skin remain adherent at the end of three weeks, one may be certain that the burn is one of the third degree. It is relatively safe at this time to soak off small pieces of slough, but great care



must be exercised to avoid overwhelming the patient by releasing a large amount of toxin.

Children tolerate granulating wounds very badly. Cultures of these wounds generally show

that the superimposed complication cannot be withstood.

In cases with large granulating wounds one is confronted with the danger of taxing the child



Fig. 16. Case 10. Showing characteristic deformity resulting from old burn of chest and neck. Chin-chest adhesions have formed and the anterior muscles of the neck have shortened. Large granulating wound with scar tissue base still present.



Fig. 17. Case 10. Debridement has been done of entire area. Pinch grafts applied to neck and upper chest.



Fig. 18. Case 10. Complete healing with correction of deformity. The cosmetic result remains to be taken care of later after the development of a new subcutaneous tissue under the graft.

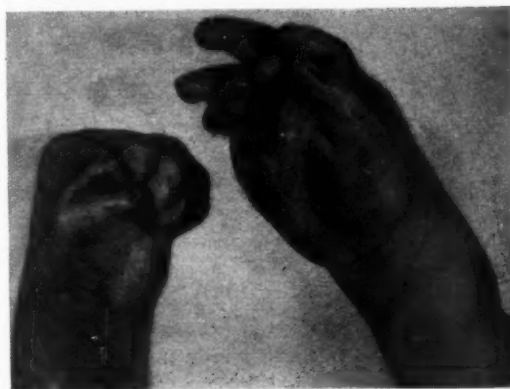


Fig. 19. Case 11. Showing complete disability of both hands possibly aggravated by inadequate splinting and maintenance of separation of fingers.



Fig. 20. Case 11. Showing present stage of the correction.

the same organisms that are found on normal adjacent skin. Unless skin grafting is done promptly, the child develops the picture of exhaustion and succumbs, or some serious complication arises. Diarrhea, suppurative joints, otitis media, mastoiditis, pneumonia, pyelitis, septicemia, endocarditis, myocarditis, nephritis, as well as all the acute infectious diseases of childhood are seen with great frequency. It is our belief that many children are surviving the initial period during which they previously died, only to succumb later from some such complication. It is quite possible that the strength and resistance has been so impaired by the toxemia

too greatly with the operation of skin grafting, but at the same time one must be aware that delay generally means a poorer surgical risk (Figs. 12, 13, and 14). As a result of this experience, we are grafting at the earliest possible date even in the presence of gross infection. This is generally accomplished in the third or fourth week after the thermal insult.

#### SKIN GRAFTING

It has been our custom to use pinch grafts for large denuded areas. These may be placed on an infected granulating area and still there is a reasonable chance for a successful take. Thiersch



grafts have been used on the exposed surfaces, because of the better ultimate cosmetic result.

It is desirable to skin-graft at the earliest possible date, not only to avoid exhaustion, but also



Fig. 21. Case 12. Showing the position maintained in burns of the axilla and arm to prevent the development of arm-chest adhesions.

to avoid contractures. When the grafting is done sufficiently early, a new subcutaneous tissue will form (Fig. 15). Contractures occur only when granulation tissue is permitted to heap up layer upon layer and subsequently to be covered with epithelium. Later this granulation tissue forms a scar tissue base which contracts and causes deformity. It is sometimes stated that a circular pinch graft of an extremity will later interfere with the venous and lymphatic return, and cause edema. This is true only if the granulation tissue is permitted to heap up previous to the grafting.

It is frequently found that a profound anemia has developed by the time the child is ready for grafting. The red blood cell count is rarely over three million per cubic millimeter, and the hemoglobin is usually under 50 per cent. It is desirable that the blood elements be restored to approximately normal by transfusion before grafting. Sluggish granulation tissue is remarkably improved by this procedure and the success of the graft insured.

#### DEFORMITIES

We frequently see old burns involving the chest and neck. The child has been permitted to have a pillow under the head. This invariably results in shortening of the anterior muscles of the neck with the development of chin-chest adhesions. In these cases it has been our practice to first correct the deformity by doing a complete debridement of the scar and granulating wound. The child is then placed on a Bradford frame with the head hanging downward (Figs. 16, 17, and 18). The wound is then covered with pinch grafts in an effort to obtain prompt epi-

thelization. Six months to a year later the child is recalled and an effort made to get a satisfactory cosmetic result by the use of pedicle flaps, full thickness inlays or Thiersch grafts. The re-



Fig. 22. Case 13. Showing method of correction after arm-chest adhesions have occurred. An anterior and posterior pedicle flap have been turned up to form a new high axilla.

sults obtained from these measures have been gratifying.

Deformities of the hands in children are exceedingly common and in part are avoidable by proper splinting after the open method of treatment has been discontinued and the careful maintenance of separation of the fingers to prevent webbing. These measures often avoid the necessity of extensive plastic procedures which at times are exceedingly difficult (Figs. 19 and 20).

Burns involving the axilla are of great importance because of the serious disability caused by the formation of arm-chest adhesions. This deformity may largely be avoided by keeping the arm in abduction during the entire period of healing (Fig. 21). Should webbing occur, this may possibly be best corrected by dividing the web high into the axilla and turning an anterior and posterior flap into this newly formed axilla, and filling in the lower defect with either Thiersch or pinch grafts (Fig. 22).

## CONCLUSIONS

1. The treatment of burns with tannic acid followed by exposure to air lessens toxemia.
2. Tannic acid as an initial dressing on a burn is analgesic.
3. The local astringent effect prevents the loss of body fluid.
4. Secondary infection is markedly limited by

the absence of a favorable nidus for bacterial growth.

5. Scar tissue formation has been less marked than that observed after treatment by other methods.

6. The protective layer of coagulated protein forms a scaffold for the growth of the young epithelial cells over the denuded area.

## SICKNESS AMONG INDUSTRIAL EMPLOYEES

In a report recently published the United States Public Health Service points out that an influenza epidemic was in progress during the final month of 1928, affecting adversely the rate of sickness in the fourth quarter of that year. For this reason the disability rate for the last three months of 1929 among a group of about 110,000 industrial employees makes a favorable comparison with the rate for the corresponding period of the preceding year. The frequency of disability from sickness lasting more than one week was 27 per cent lower in the fourth quarter of 1929 than in the same quarter of 1928. The respiratory group of diseases shows the greatest decrease, of course; the rate was little more than one-half that experienced in the last three months of 1928. Influenza and grippe decreased 64 per cent, and pneumonia 26 per cent from the incidence experienced during the fourth quarter of 1928. In the last three months of 1929, however, bronchitis and diseases of the pharynx and tonsils increased 13 and 9 per cent, respectively, but the incidence of tuberculosis declined 20 per cent, and the rate for respiratory diseases other than those mentioned above dropped 5 per cent from the rate of the fourth quarter of 1928.

It is quite possible that the recorded sickness presented above understates to some extent the real magni-

tude of the incidence rate of cases causing disability for more than one week, because a number of the reporting associations do not pay sick benefits for disability on account of the venereal diseases, for illness resulting from violation of any civil law, for the results of willful or gross negligence, and for certain other causes; and some associations do not pay for chronic diseases contracted prior to the date of joining the organization, for disabilities caused by or growing out of specific physical defects, nor for illnesses not reported within specified time limits. Of more importance, perhaps, is the fact that the reports come from the larger companies having well-organized employment and medical departments which make a physical examination of applicants, so that a somewhat favorably selected group from a health standpoint may result. Workers in poor health who doubt their ability to pass the physical examinations may tend to drift into the smaller industrial establishments where the physical condition of the applicant is usually given less consideration. As offsetting factors a few cases of malingering may be included in the records, and the associations with the most liberal sick-benefit provisions may attract persons when their health begins to fail. On the whole, it seems that the statistics presented may tend more toward understatement than overstatement of the average frequency of disability which lasts longer than one week among industrial employees.

## THE EARLY DIAGNOSIS OF CARCINOMA OF THE STOMACH\*

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*Minneapolis*

CARCINOMA of the stomach presents a more important problem to the medical profession than is generally recognized. An attitude of indifference toward this serious affliction is apparent due to an impression that gastric cancer is rare and, in any event, an almost hopeless condition. Both of these premises are grossly incorrect. Actually the disease is not rare and, if diagnosed early, can, in many cases, be cured.

Gastric cancer is the most frequent type of fatal carcinoma. For example, in the State of New York, in 1928, carcinoma of the stomach and liver was the cause of death in more than one-third of all the carcinoma fatalities. Its nearest competitor in this respect, cancer of the female genitalia, caused less than one-fourth of all the deaths from cancer. In some areas the frequency is even greater. Considered in another way, carcinoma of the stomach and liver represent the causative factor in 4.6 per cent of all the deaths of individuals over the age of forty-five. This compares strikingly with about 1.5 per cent for cancer of the uterus and ovaries, 1 per cent for cancer of the breast, and 4 per cent for cancer of the buccal cavity. A comparison of this figure of 4.6 per cent for carcinoma of the stomach with pneumonia, which represents 3.8 per cent of deaths past the age of forty-five, or diabetes, which represents 2 per cent, indicates strikingly the grave importance of this disease as a cause of death. One out of every twenty-two deaths over forty-five years of age is due to cancer of the stomach or liver.

There is only one form of treatment for carcinoma of the stomach which holds out any reasonable hope of cure—radical surgery. This can only be effective in the cases which are diagnosed at an early stage and this is the problem which confronts us.

There are three major difficulties which prevent the early diagnosis of this condition. The

first is the insidious character of the disease. There is hardly a condition which may progress so far with so little warning as carcinoma of the stomach. It is true that the patient usually has symptoms, but these are so similar to the gastric upsets which are such a common part of everyone's life that little or no attention is paid to them. The average individual finds a host of comparatively innocent reasons to account for the feeling of fullness after eating, loss of appetite, gas eructations, and slight epigastric distress which may be the very first symptoms of carcinoma. Too often attention is directed to decayed teeth, dietary indiscretions, nervousness and overwork, while the organic gastric disease is overlooked. In those cases where the lesion arises in the pylorus or near it, producing early obstruction, the symptoms are more striking and medical aid may be sought at an early stage.

The second factor of delay is due to the character of the patient. Poverty, ignorance, prejudice, or fear may prevent an individual who has severe symptoms from consulting a physician. Too often the cancer patient has gone to some type of quack or has taken some type of patent medicine before attempting to obtain competent medical advice. Frequently the fear of cancer actually keeps the sufferer from consulting a physician because he does not want to hear the truth.

These two factors have led to much of the anti-cancer propaganda which has been so widely disseminated amongst the public in the past few years. Although this educational campaign serves a very good purpose, it should really be made secondary to an educational campaign directed to the medical profession itself.

For it is in the physician that the third major difficulty in the early diagnosis of gastric cancer lies. Even if a patient comes to a regular practitioner when his lesion is in an early stage, the chances are extremely good that it will not be recognized and that dangerously dilatory treatment will be given until it

\*From the Departments of Roentgenology of the University of Minnesota and the University Hospital, Minneapolis, Minnesota. Read before the Minnesota State Medical Association, Duluth, Minnesota, July 15, 1930.

is too late. This is the problem which the medical profession faces. There is no great benefit in urging the layman to consult a physician when he has symptoms of cancer of the stomach if the physician does not recognize the condition when he sees it. Dr. Jacob Sagel and I have been making an intensive study of the histories of all the cases of carcinoma of the stomach which have presented themselves at the University and Minneapolis General Hospitals during the past year. In this series the patients had consulted a doctor within three months, on the average, after the onset of recognizable symptoms. The diagnosis, however, had been delayed from six months to two years after the physician had been called in. This delay was due to either inadequate examination or the inability of the practitioner to recognize the findings in gastric carcinoma. Likewise no adequate treatment had been given, with the result that the majority of cases seen were inoperable. The medical histories of these patients represent a serious indictment of the medical profession. They indicate clearly that cancer of the stomach is not being taken seriously enough by the average physician and that he is making no great effort to further its early diagnosis. On the contrary there appears to be a tendency to give drugs such as alkalies or hydrochloric acid and watch the patient for long periods of time until the symptoms and signs are unmistakable.

How can the diagnosis of carcinoma of the stomach be made in an early stage? In the later stages, the marked loss of weight, cachexia, palpable mass, vomiting, often bloody, serve frequently to identify the disease without elaborate procedures. But the diagnosis at this stage is worth very little to the patient as surgery will probably be ineffectual. In the early stages, on the other hand, the physical examination is usually negative. The history, if carefully taken, may be suggestive of carcinoma, but a diagnosis on the history alone is hardly possible and would lead to numerous errors both positive and negative. The best method of diagnosis is by a competent x-ray examination. In experienced hands, this is one of the most accurate procedures in medicine. Such statistics as have been presented by Carman, from the Mayo Clinic, or Merrill, from

the Massachusetts General Hospital, indicate that the diagnosis can be correctly made by the roentgen method in 92 to 98 per cent of the cases. Obviously this diagnostic accuracy is greater than could be achieved under average conditions, but it indicates the possibilities of the method.

Unfortunately all patients who come to the physician complaining of gastric symptoms cannot be given a roentgen examination. It would hardly be, either economically or socially, feasible. Some selection must, therefore, be made. First of all, every patient past the age of forty who has gastric complaints should be looked upon as a cancer suspect. Most of them will not have carcinoma, it is true, but for the sake of those that do we must examine all of them with the greatest care. The age limit is placed at forty because the vast majority of cases occur past this age, but we must bear in mind that carcinoma of the stomach occasionally occurs in much younger persons also.

In these cases, at least, in addition to the usual examinations, two procedures should always be undertaken. The first is a gastric expression with determination of the presence or absence of free hydrochloric acid; the second, an examination of the stools, under proper conditions, for occult blood. Neither of these tests are pathognomonic, but both are comparatively simple and can be done by any physician in his office. Therein lies their value. The presence of free hydrochloric acid in the gastric contents does not rule out carcinoma of the stomach, but makes its presence somewhat less probable. The absence of free hydrochloric acid in the gastric contents, especially if the histamine test has not been used, is also not of any great significance, yet it makes it more probable that carcinoma of the stomach may be present. Likewise the absence of blood in the stools does not rule out gastric cancer but makes its presence somewhat less probable. The presence of occult blood in the stool is of considerable significance as indicating that the gastro-intestinal tract is not normal and that cancer may very well be present. If either or both of these findings are present, that is, the absence of free hydrochloric acid in the gastric contents and the presence of occult blood in the stool, then certainly the



physician is not only justified but ethically compelled to urge strongly the need for further examination. The absence of either of these findings should indicate some conservatism of treatment but the persistence of symptoms for more than a month after the institution of medical treatment should also be an indication for further examination. The most important part of this further examination is a thorough and competent roentgenoscopic and roentgenographic examination of the stomach.

By selecting cases in this manner, the *x*-ray examination of the majority of patients with carcinoma of the stomach may become feasible. The possibilities of very early diagnosis by this method are not well known. So few cases are referred for roentgen examination at an early stage that it is difficult to determine how accurate the method would be under those conditions. The author has had striking evidence, however, in a number of cases which indicate the remarkable possibilities which are present. In some cases, for example, it is possible to demonstrate by *x*-ray examination a carcinoma which is so small that the surgeon cannot palpate it after the abdomen has been opened. I have seen one case in which the pathologist was doubtful as to the presence of any lesion on gross examination of the portion of the stomach removed at operation, although the lesion was perfectly obvious on roentgenoscopic and roentgenographic examination. It is possible, in many cases, by the careful use of both the roentgenoscope and films, to distinguish between benign and malignant gastric tumors. I have been able, in two cases, to demonstrate both types, independent of each other, in the same stomach. The demonstration of a benign papilloma of the stomach can frequently be made and thus a possible precursor of gastric cancer can be removed. The distinction between benign and malignant gastric ulcers can also be made by the roentgenological method, but with greater difficulty. It must be borne in mind that benign ulcers, adhesions, spasm and other functional conditions, and pressure from extra-gastric lesions may simulate carcinoma and must be ruled out.

The difficulty of the *x*-ray examination of the stomach cannot be over-emphasized. It is no doubt the most exacting type of roentgen ex-

amination to make and perhaps is one of the most difficult diagnostic procedures in medicine. The importance of the experience and competence of the examiner can therefore not be overestimated. While in the hands of a Carman the diagnoses may be 95 per cent correct and 5 per cent in error, in the hands of a tyro the figures may very well be reversed. The possibility of overlooking a small carcinoma of the stomach is so great and the consequences so serious that the greatest care must be exercised in making the examination. In addition to the competence of the examiner, an adequate equipment is necessary in order that good roentgenograms may be made.

It is not within the province of this paper to consider the technic of the examination and the diagnostic criteria in detail. In brief it may be said that the best method consists of a combination of roentgenoscopic and roentgenographic examinations. For the inexperienced examiner it is especially important that a large series of good films of the stomach in several positions be made as small lesions may be easily overlooked on roentgenoscopy alone. In determining the presence of a small carcinoma, the absence of peristalsis in a portion of the stomach wall, rigidity to manipulation, and loss of the usual rounded contour are probably the most important signs. The presence of a small filling defect almost resembling a finger print on the film is also a frequent and important sign. In general the findings may be the same as in advanced carcinoma except that they are smaller and more difficult to observe. It is well to remember also that repeated roentgen examination is a justifiable and necessary procedure. A small lesion overlooked at one examination may be seen the very next day when the examination is repeated. If a few weeks or a month is allowed to intervene between examinations, the diagnosis of a doubtful case may become certain. Too often a negative diagnosis is taken as final in spite of the character of symptoms which should clearly indicate the necessity for repeating the procedure. By considering carefully all the clinical and roentgen evidence, by seeing and examining the patient repeatedly, the diagnosis of carcinoma of the stomach may be made at a much earlier stage than is done at present.



## SUMMARY

Carcinoma of the stomach is the most frequent cause of cancer mortality and is one of the common causes of death in the later decades of life.

The importance of early diagnosis lies in the fact that small lesions are frequently curable by radical surgery.

The average physician fails to recognize these cases until long after they have become inoperable.

Every patient past the age of forty with gastric symptoms should have a thorough examination including especially gastric analysis, stool examination and a competent x-ray examination of the stomach.

The latter, in experienced hands, is one of the most accurate procedures in medicine. The early diagnosis and the cure of carcinoma of the stomach would be greatly facilitated if more patients with gastric complaints were thoroughly examined by the roentgen method.

## FUNERAL DIRECTORS COÖPERATE IN HEALTH WORK

The following excerpts are taken from an address by Dr. H. Jackson Davis, epidemiologist, on "How Funeral Directors Can Help in the Control of Communicable Diseases," delivered before the annual convention of the New York State Funeral Directors' Association. The excerpts were originally printed in *Health News*, August 25, 1930.

In his capacity as a sanitarian, it is the duty of the funeral director to protect his associates and the public from the dangers of communicable diseases. The possibility that the presence of a communicable disease may not have been recognized presents the greatest danger for the funeral director and his assistants. This is strikingly shown in the following instances:

A few years ago, in a neighboring Canadian Province, approximately forty cases of unusually severe smallpox and twenty-one deaths were directly traced to a case and death from hemorrhagic smallpox which was not diagnosed as such. A considerable number of these cases were exposed only at the time that they attended the funeral of the initial case. This epidemic would have been prevented if those in contact with the patient, before or after his death, had been recently vaccinated. As a matter of fact, in this outbreak, more than 50,000 people were vaccinated within a space of ten days and the epidemic was checked.

The second instance involved an undertaker's assistant who had never been vaccinated. A man, 74 years of age, left Illinois in the spring of 1924, to visit his

brother who resided in a small isolated village in New Jersey. He was taken ill 13 days after his departure for the east and died a week later, death being ascribed to kidney disease and heart failure. The body was embalmed and shipped back west. The undertaker's assistant, a man 48 years of age, who helped embalm this body, was taken ill within two weeks, with what proved to be a severe case of smallpox from which he eventually recovered. He had not been away for several months and insisted that he had seen no one whom he suspected might have had smallpox. He distinctly recalled, however, having seen an eruption identical with his own on the corpse he had helped embalm. About the time that the undertaker's assistant became ill, another severe case of smallpox developed in a woman living in the household in which the Illinois resident had died.

It was later learned that just before going east, the man who died had been exposed to a case of smallpox in the house in which he boarded. Hence, the presumption seemed warranted that he had died in the early stages of hemorrhagic smallpox, undiagnosed as such.

Vaccination is a safe and harmless preventive of smallpox. Less than half of one per cent of all persons having smallpox in upstate New York during the past five years gave any history of having claimed to have been successfully vaccinated within seven years preceding the attack. Funeral directors should not only apply scientific principles of disinfection and cleansing in their work but should see that every individual who is associated with the preparation of bodies for burial is vaccinated every three years.

## EARLY DIAGNOSIS AND TREATMENT OF MALIGNANT CONDITIONS OF THE MOUTH AND LIPS\*

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**M**ALIGNANT tumors of the mouth and lips, because of the possibility of their being recognized early, because of their accessibility, and because of the ease with which the lymphatic drainage of these areas can be blocked, offer a good prognosis in a high percentage of cases if proper treatment is instituted promptly. The patient usually is aware of the presence of trouble in this region earlier than in almost any other portion of the body. Indifference due to lack of appreciation of the possible seriousness of the condition, however, often leads him to delay seeking medical advice. At an early stage the lesion looks no different to him than inflammatory ulcers, fissures or traumatic areas that have appeared in the same region many times previously and that have healed spontaneously. The persistence of the lesion, or its increase in size, ultimately arouses his suspicion of its possible seriousness. Then, if he is wise, he seeks the advice of his family physician. If he is not wise, he visits a cancer quack. Various educational measures have been carried out in recent years by different medical organizations. These measures include the institution of "Cancer Week" and the delivering of lectures on public health. They have resulted in fewer patients with questionable conditions of the lip and mouth visiting the charlatan, whereas increasing numbers are coming to the physician when the growth is still in an early stage.

The treatment most commonly used by the quack consists of applications of an escharotic, usually an arsenic paste. If the destruction is carried out sufficiently widely this often cures the local growth. Otherwise, as with any incomplete treatment, increased activity results. As a rule, an appreciable portion of the lip is lost, with the production of more or less deformity. This, however, is of minor consideration, in view of the seriousness of the condition. One of the principal objections to this type of treatment is that no attempt is made to determine the nature

of the growth. The lesion is treated in the same way, whether it is inflammatory, or a benign or malignant neoplasm, but the patient is always given the impression that it is malignant. Of greater importance, however, is the fact that the patient receives a false sense of security. As a rule, consideration is not given the lymphatics which drain the area. Therefore, later, when an enlarged node appears in the submental or the submaxillary region, as occurs in from 20 to 30 per cent of cases even if local recurrence is absent, the patient does not appreciate the seriousness of the situation and often allows the condition to progress to an inoperable stage.

On the other hand, physicians also are capable of making errors. Even though the patient with such a lesion consults his physician first, it is by no means a certainty that he will receive treatment which will offer him the greatest assurance of cure. Many times, on account of the insignificant appearance of the lesion, silver nitrate or other mild caustic is applied, or it is decided to try radium or roentgen rays. If the lesion is already malignant, this attempt to determine what these different agents will accomplish is likely to deprive the patient of his best chance to get well. Such treatment is usually incomplete and stimulation of the growth, with increased possibility of metastasis, often results. Every precancerous lesion should be given the same consideration as lesions that are malignant, until their benign character is definitely established. In an adult a high proportion of chronic sores of the mouth or lip are malignant, and it is inexcusable to treat such a condition without first making every effort to establish a diagnosis. As a matter of fact, the possibility of malignant change in such lesions is not limited to adults alone. Many times epitheliomas of the lower lip are encountered in persons in their early twenties or even in their teens. At The Mayo Clinic an epithelioma of the lower lip was excised recently from a boy aged thirteen years (Fig. 1). If the area on the lip has a slightly indurated border, the diagnosis may be evident on clinical examination alone, to one of sufficiently wide

\*From the Section on Laryngology, Oral and Plastic Surgery, The Mayo Clinic, Rochester, Minnesota. Read before the Minnesota State Medical Association, Duluth, July 14 to 16, 1930.

experience. In approximately half of the cases, however, a microscopic examination only will permit of an accurate diagnosis. This is particularly true of lesions which have their origin in areas of leukoplakia, especially of syphilitic type (Figs. 2, 3 and 4), chronic thrush, recurring chronic fissures, and other ulcers of the mouth and lip which are inflammatory only. Such lesions can be excised readily under local anesthesia, without appreciable deformity, and following microscopic study treatment of the lymphatics can be carried out, if it is indicated. If the growth is so large or is so situated as to render complete excision inadvisable, there should be no hesitancy in removing a portion for biopsy. Lesions that have been treated previously present the greatest difficulty from a diagnostic standpoint. Biopsy is frequently unsatisfactory in these cases, because the marked inflammatory reaction renders the results of microscopic study uncertain. Many times observation over a period of several weeks, or even of months, may be necessary in order to establish a diagnosis.

Little is to be gained by reviewing the controversy existing between surgeons and radiologists as to the most effective method of treating carcinoma of the mouth and lip. The comparative prognosis with operation and with irradiation is the criterion on which choice of treatment should hinge. The negligible difference in the cosmetic result and the slight operative risk associated with the surgical treatment of such lesions are of minor consideration, although to the lay mind they are often outstanding. It is now generally conceded that a combination of operative procedures and irradiation offers the best prognosis in the majority of cases.

The type of tumor and the rapidity of its growth are most important considerations in determining the treatment advisable in a given case. Broders' method of grading carcinomas according to their activity as evidenced by cellular differentiation and formation of keratin has been of inestimable value from the standpoint of prognosis and treatment. This grading by microscopic examination has, with few exceptions, corresponded strikingly with the clinical course of the disease. The slow-growing, mildly malignant lesions are designated as of grade 1, and the successively more active growths as of grade 2, 3, and 4, respectively. In lesions graded 1 the

local growth is, as a rule, readily controlled and extension in the lymphatics is not likely to occur. Tumors graded 4 present rapid local growth, metastasize widely, and are prone to recur



Fig. 1. Boy aged 13 years with squamous cell epithelioma of lower lip.

promptly following removal. Lesions of grade 1, 2, or 3, if they are surgical, should be excised or destroyed with the actual cautery or diathermy, and the regional lymph nodes should be removed subsequently. With neoplasms of grade 4, intensive irradiation should be directed against both the local lesion and the regional lymphatics. The primary growth is also treated surgically at times, but irradiation constitutes the major part of the treatment.

In the clinic, epitheliomas of the lip are removed surgically unless there is definite contra-indication to operation. The risk associated with the removal of such growths, together with the regional lymphatics, has been found to be so slight that comparatively few contra-indications exist. Even though the lesion is extensive, if it is of a low grade of malignancy, and if there is no attachment to the mandible, immediate

plastic reconstruction of the lip is permissible. After removal of the entire lower lip, sufficient tissue can be brought in from the cheeks to restore the lost parts satisfactorily, both as regards



Fig. 2. Squamous cell epithelioma of lip.

function and cosmetic appearance. If the growth is active and involves the cheeks, or if it is attached to the mandible, wide excision with the cautery knife, or destruction by surgical diathermy, leaving the wound wide open, is advisable. Thorough cauterization of the surface of the mandible over the area of attachment is necessary in such cases. Plastic reconstruction of the lip is deferred until the patient has been free from evidence of trouble for at least nine months to a year, depending on the extent and activity of the growth. It may then be effected by means of a lined flap from the forehead, a triangular flap from the upper lip, or a tube flap from the thorax. Removal of the submental and submaxillary lymph nodes on either side, as well as of the upper jugular group of nodes on the side of the involvement, is carried out in all surgical lesions of the lip. This is usually done at an operation subsequent to the one at which the primary growth is removed. If excision by cautery has been necessary, dissection of the nodes must, as a

rule, be deferred for about three weeks. However, this may be done before the operation on the lip. If involvement of the nodes is obvious on clinical examination, the operation on the nodes usually precedes treatment of the primary growth. In all cases in which involvement of the nodes is demonstrable at operation subsequently, intensive treatment by roentgen rays or radium is given. If the patient's age or general condition contra-indicates surgical operation, the lesion of the lip, and the lymphatic structures, are treated with irradiation alone. As a rule, dissection of nodes is not carried out if patients are aged more than seventy years, unless the growth is distinctly active and the patient's general condition is unusually good, since there is less likelihood of extension by the lymphatics if patients are advanced in years. Lesions that have received treatment with irradiation previously must be treated more widely, and the possibility of recurrence is greatly increased.

The treatment of carcinoma involving the insides of the cheeks is much the same as that of carcinoma of the lips. Small, superficial epitheliomas in this region may be excised with the cautery knife. As a rule, however, these lesions, as well as the extensive ones, are more readily and satisfactorily treated with surgical diathermy. If the tumor is perforating the cheek, the full thickness of the cheek should be excised with the cautery knife. The defect should be left wide open and should be closed later by means of a plastic procedure. Radium is often used as an adjunct in these cases; radon points are inserted into the wound at the time of the operation, or the plaque or tubes are used later. If metastasis from carcinoma of the cheek takes place it invariably appears on the same side as that of the lesion unless the growth is extremely active or has been treated previously with irradiation. Dissection of the nodes as a rule is deferred until about three weeks after the operation in the mouth, although if there has been clinical evidence of involvement it may be done the following day providing there is not too much local reaction.

The malignant tumors of the jaws consist of epitheliomas, sarcomas of different types, and adamantinomas. Epitheliomas are by far the most common. A large percentage of these are of low grade or moderate activity. They may



vary from the inactive lesions which develop in areas of papillary leukoplakia to fulminating, sarcoma-like neoplasms, graded 4. The clinical appearance presented by these neoplasms of

Surgical lesions of the tongue may be excised sharply or with some form of cautery knife. Often radium seeds are inserted into the open wound prior to suturing. Closure of the wound



Fig. 3. Epithelioma developing in area of syphilitic leukoplakia inside right angle of mouth. Area of leukoplakia posterior to angle of mouth on opposite cheek may be noted.

varying activity is distinctive, although this difference is difficult to describe accurately; in general, the softer, more friable and more vascular the lesion, the higher its grade of malignancy.

Epitheliomas of the jaws are better treated by surgical diathermy or the actual cautery than by resection. In the very active growths, intensive irradiation is used in addition to surgical measures, and reliance is placed chiefly on this. Diathermy in these cases is used chiefly to coagulate the tumor and its attachment, thus producing a dry, sterile bed into which radon points may be inserted. In low-grade epitheliomas, surgical measures are relied on almost entirely. The regional lymph nodes in these cases present much the same problems as in cases of epithelioma of the lip and cheek, although, if the lesion is confined to the alveolar process alone, metastasis is much less likely to occur than when the adjacent soft tissues are involved.

Most of the malignant tumors of the body of the tongue are epitheliomas. They are, as a rule, easily recognized clinically. Because of the danger of early metastasis from such lesions, it is especially important that a definite diagnosis be established and treatment be instituted promptly.

following excision, either by the knife or with the cutting cautery, usually is followed by primary healing. If radium points are inserted, the wound frequently will open later. When the growth on the tongue is extensive or the floor of the mouth is involved, surgical diathermy is preferable to excision. Following surgical diathermy there is increased danger of secondary hemorrhage on separation of the slough. As soon as the wound in the tongue permits, a bilateral dissection of the submental and submaxillary nodes with a cervical block on the side of the involvement is done if the patient's general condition warrants. If the patient is not a good surgical risk, more conservative dissection of the nodes is carried out. All patients with carcinoma of the tongue receive intensive irradiation of the regional lymphatic structures, regardless of the type of treatment used on the local lesion.

The results following early treatment of carcinoma of the lip in the clinic are extremely satisfactory in the majority of cases. More than 90 per cent of the patients are well after five to eight years in the cases of such lesions in which the lymph nodes were removed along with the lesion of the lip before there was demonstrable



evidence of involvement. If the nodes are involved at the time of removal the chance of cure is markedly reduced, even if more extensive resection of lymph nodes is carried out. Studies



Fig. 4. Squamous cell epithelioma of tongue developing on syphilitic leukoplakia.

made by Broders in 362 cases of carcinoma of the mouth and throat in which operation was done in the clinic between 1904 and 1915 disclosed that more than 65 per cent of patients without metastasis from malignant tumors of the

mouth obtained good results. Of patients without metastasis from carcinoma of the tongue 50 per cent were well. If treatment of carcinoma of the mouth was delayed until after the lymph nodes became involved, the prognosis was much less satisfactory. In recent years irradiation to supplement surgical measures has been used as a routine. Such treatment should yield an increased number of cures, although statistical studies of results have not yet been completed.

#### CONCLUSIONS

1. Treatment should never be instituted in any chronic lesion of the mouth or lip until a diagnosis has been established. If this procedure were carried out as a routine, the prognosis in malignant tumors of this region would be greatly improved.

2. The treatment advisable in a given case of malignant growth of the mouth or lip is dependent on the age of the patient and the extent and activity of the growth. Operation is more effective in lesions of low grade and in those of moderate activity, whereas irradiation is preferable in highly malignant tumors. Surgical measures, supplemented by irradiation, offer the best prognosis in the majority of cases.

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## THE EARLY DIAGNOSIS OF CANCER OF THE UTERUS\*

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CARCINOMA of the uterus must, clinically, be divided into that involving: (1) the cervix; and (2) the body of the uterus.

Carcinoma of the body of the uterus has a far more favorable prognosis, both in its early and late stages, than that of the cervix. By this I mean that a late diagnosis of cancer of the body of the uterus is not so disastrous as a late diagnosis of cancer of the cervix.

As a matter of fact, the infrequency of cancer of the body of the uterus makes it more easily overlooked, and although extension of the cancer, either direct or by metastases, is slow, one must ever be on his guard in cases of menorrhagia or metrorrhagia occurring after thirty-five years of age. The first thought should be of cancer, especially when no other demonstrable tumors can be felt on bimanual examination. The proper procedure in these cases is to do a diagnostic curettage and submit the curettings to microscopic examination. I fear that at the present time this method of arriving at a diagnosis is not used as frequently as it should be, and really it affords the only safe way by which a diagnosis can be made.

The treatment in these cases lies between: (1) a complete hysterectomy, which can be done with greater prospect of cure than when the case is one of carcinoma of the cervix; and (2) the use of radium. Both methods may be used. Fortunately the prognosis is good.

On the other hand, the other type of carcinoma of the uterus, that is, carcinoma of the cervix, exacts, according to statistics, a toll of 10,000 deaths every year. This is a story more sad than that of cancer of the breast.

Fluhmann reports a large series of cases of carcinoma of the cervix in which, at the time the patients presented themselves for examination, 71 per cent were far advanced and 28 per cent showed limitation to the cervix, leaving a small margin of from 1 to 2 per cent in whom early cancer of the cervix was found. Other writers have reported similar statistics showing that over

95 per cent of all patients who presented themselves with cancer of the cervix were far beyond the so-called stage of early diagnosis and afforded a very poor prognosis for even a three to five year cure.

Clark and Ferguson show that of all patients who came under observation within six months of the first symptom manifest to the patient, 60 per cent were inoperable and that one in seven had a chance for a five year cure, while, if they had presented themselves for examination some time after the six months period in which the symptoms first developed, only one in twenty-six had a chance for a five year cure. Is it any wonder that we should exert ourselves to search for and attempt to recognize early cancer of the cervix, or seek for methods which will prevent the formation of this dreaded disease.

Unfortunately it is impossible to tell, from the clinical or microscopic picture, how long a cancer has been present. But more can be told as to the prognosis.

In Schmitz's clinical classification the cases are divided into four groups:

1. A simple localized growth or nodule with no infiltration.
2. Beginning infiltration within the confines of the cervix.
3. Invasion into the parametrium, easily determined by rectal examination.
4. The presence of necrosis, infiltration, sepsis, etc.

With each successive stage the prognosis becomes more grave. With this clinical classification must be coupled Broders' classification of the microscopic picture in which he has shown that the more a neoplastic cell approaches the normal cell, the less malignant the tumor, and, conversely, the more malignant the tumor, the more undifferentiated or more embryonic the new cells. It seems to me that Schmitz's classification as well as Broders' must be kept in mind in estimating the prognosis in these cases of carcinoma. At best the usual case of carcinoma of the cervix has developed beyond the favorable stage.

\*From The Duluth Clinic, Duluth, Minnesota. Read before the Annual Meeting of the Minnesota State Medical Association, Duluth, July 14, 1930.

In view of these statistics does it not behoove us to consider what can be done to prevent carcinoma of the cervix?

The cause of carcinoma, of course, is not definitely known, but clinical experience has shown that certain factors, namely irritation and infection, have an etiological bearing.

Pemberton and Smith have shown that cancer of the cervix is preceded by pregnancy in 90 per cent of the cases. Pregnancy leaves as its aftermath cervical laceration or infection, or both. Naturally, then, our attention should be directed to these conditions.

The subjective symptoms consist of vaginal discharge and uterine bleeding in some form.

Vaginal discharge in a very large percentage of cases is due to inflammation or infection of the cervix. The few exceptions are probably those cases of infection with *Trichomonas vaginalis*. Clark and Ferguson report that 25 per cent of their cases presented themselves with discharge in some form.

Bleeding may be simple spotting, irregular or profuse bleeding, or bleeding upon irritation. Clark and Ferguson have shown in their series that 75 per cent of the cases presented themselves with hemorrhage in some form. These two salient facts, vaginal discharge and bleeding, must not be lost sight of.

Certain points in diagnosis should be emphasized:

1. A digital as well as a speculum vaginal examination should be made in all cases of bleeding that are irregular in any form. A speculum examination should be made in all cases of vaginal discharge and the cause of the discharge determined.

2. The general appearance of the cervix must be determined and certain facts ascertained: is it lacerated, does it bleed on manipulation, is it soft when touched with the forceps, are there any hard, isolated nodules, is it papular?

These features are not necessarily apparent in the vaginal portion of the cervix, but also must be searched for in the cervical canal itself. One must always bear in mind that an early diagnosis of cancer of the cervix is very difficult to make clinically.

A positive diagnosis can only be made by doing a biopsy in all suspicious cases. The patient need not necessarily be sent to a hospital for a

biopsy. It can be done in the office. It is not painful. The fear that one may have that if it is a cancer, it may be spread by using a knife, can be allayed by the fact that one can cauterize the base of the cut surface and seal the lymphatics.

To my mind much can be done by cleaning up these eroded cervixes by using the nasal cautery, burning down the erosions and ectopions and establishing a healthy, non-infected cervix. This is a simple office procedure and does cure these cases. In my opinion one is grossly negligent who ignores this responsibility. This is especially true in the postpartum stage, but should be done in all cases and the age of the patient should not have any bearing as regards this prophylactic measure.

Pemberton and Smith report that in a series of 3,814 trachelorrhaphies, 740 amputations if the cervix and 1,408 cauterizations of the cervix (a total of 5,962 cases seen in the Free Hospital for Women), only five cases were known to have developed cancer and these were in the trachelorrhaphy group. It seems to me this speaks volumes for the efficiency of cauterization and the cleaning up of infected cervixes.

In those cases of carcinoma of the cervix discovered early, radium or hysterectomy, or both, offer a very favorable prognosis. As to the relative merits of hysterectomy or radium treatment, I will leave that to your own judgment.

#### SUMMARY

In all cases of irregular bleeding coming from the body of the uterus one must bear in mind the possibility of cancer and a diagnostic curettage should be done.

Forty per cent of all cancers in women are in the uterus.

Ninety-five per cent of all cancers of the cervix that are demonstrable at first examination at the office offer a very unfavorable prognosis for cure. Therefore, one should make every possible attempt to arrive at as early a diagnosis of cancer of the cervix as possible, and every measure of prophylaxis against the development of cancer should be instituted.

Free use of the nasal cautery, the repair of lacerations, and amputation of the cervix as indicated, give us our best hope to date in the prevention of cancer of the cervix.

Every vaginal discharge or irregular bleeding

should be thoroughly investigated to determine its cause and that cause removed.

Only by very rigid methods of examination can we hope to obtain any measure of relief in the prevention of cancer of the uterus.

The slogan for all lesions of the uterus should be:

"Early diagnosis—thorough investigation—immediate treatment."

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#### CARE OF VETERANS

The following resolutions offered by the Board of Trustees of the American Medical Association were adopted by the House of Delegates at the annual meeting in Detroit in June and a copy sent immediately to the President of the United States:

*Resolved*, That, in the opinion of the House of Delegates of the American Medical Association, legislation to extend in point of time the presumption of service origin of diseases and injuries from which veterans are suffering, to establish arbitrarily the service origin of such diseases and injuries, and to extend greatly the category of such diseases, is without sound basis in the science and art of medicine;

*Resolved*, That the provisions of such legislation to the effect that lay evidence as to the nature and extent of diseases and injuries is to be given added consideration will give to such evidence weight to which it is in no way entitled and cause pressure on the Veterans' Bureau to allow claims for compensation without adequate medical support;

*Resolved*, That legislation recently enacted providing for the enlargement of the hospital facilities at the com-

mand of the Veterans' Bureau for the care of veterans, rich and poor, who desire hospitalization and treatment for diseases and injuries that admittedly have no relation whatever to military service is unsound and communistic in character and the pending proposal to allow such veterans as are of financially limited means bonuses and money to add to their own comforts while they are in the hospital and to help support their families during that period and for limited periods thereafter is calculated to induce patients to seek hospital care through the Veterans' Bureau when such patients should be better and more economically treated as ambulant patients or treated in their own homes;

*Resolved*, That the duty of providing medical and hospital care and financial relief for indigent citizens of any state, when disabled by diseases and injuries that did not originate in the line of military duty, is a function not of the federal government, but of the governments of the several states and should be discharged through state agencies, including permanently established state, county, municipal and private hospitals; and

*Resolved*, Further, that a copy of these resolutions be sent to the President of the United States.



## THE DIAGNOSIS OF MALIGNANT CONDITIONS OF THE COLON\*

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*Rochester, Minnesota*

TO set down in sequence a chain of symptoms produced by carcinoma of the large bowel is difficult, if not impossible, particularly if one limits oneself to the earlier manifestations of the disease. The reasons for this are that the colon is at least a bifunctional organ and the symptoms of malignant neoplasms vary according to (1) situation, (2) pathologic type, and (3) the presence or absence of complications, such as metastasis, ulceration, or perforation.

Functionally, the right half of the large bowel is the absorptive portion, and the left half is concerned mostly with storage. Fluids are extracted from the intestinal content as far around as the middle of the transverse colon, and the hardened, dry, formed feces are deposited beyond this portion of the bowel to be expelled periodically without having many products extracted from them. The proximal half of the large bowel develops, with the small bowel, from that portion of the primary alimentary canal which is called the midgut, and functionally it corresponds with the small bowel. The distal segment is developed from the hindgut.

In general, it may be said that approximately 25 per cent of all the carcinomas of the colon occur in the sigmoid flexure, and about 15 to 18 per cent occur in the cecum and ascending colon. Next in order comes the mobile transverse segment, with its two fixed points, the hepatic and splenic flexures.

These anatomic divisions are important from the standpoint of symptoms only, because obstruction may occur at the angulations. For practical purposes, as related to the syndrome of symptoms, one may consider the right half of the colon around to the middle of the transverse segment one organ, and its fellow of the opposite side a different organ, pathologically, clinically, functionally and developmentally. The differences in symptoms of the two segments are mainly the differences in physiologic evidences of pathologic changes as

demonstrated by growths of the right side, and intestinal obstruction, chronic, subacute or acute, as evidenced by lesions of the left half of the colon. Pathologically, the two halves of the colon show marked differences, although the majority of the growths are of the adenocarcinomatous variety.

In the right half of the colon one finds large, flat, ulcerating growths which frequently are covered with stubby protuberances like granulation tissue, and over which often is spread a dirty, necrotic exudate. These growths usually lie on the lateral wall of the bowel, and in this segment of the colon do not tend to produce obstruction because of (1) the liquid nature of the fecal current in this situation, (2) the lack of tendency of the growth to encircle the bowel, which has a greater lumen than elsewhere in its course, and (3) the likelihood of the growth to go on to penetration, perforation or abscess formation.

In the main, it may be said that cases of malignant growths of the right half of the colon may be classified according to symptoms under three headings: (1) cases in which the diagnosis is dyspepsia, mild in character and with few localizing symptoms, or in which the diagnostic term is a synonym of the vague term intestinal indigestion or chronic appendicitis; it must be said that cases of this kind are insidious of onset, slow of progress and frequently advance to tumefaction or some complication before they are recognized; (2) cases in which weakness and loss of weight, loss of strength, and anemia are the outstanding symptoms, and (3) cases in which there is the discovery, accidental or otherwise, of a tumor in the right iliac fossa, hitherto unsuspected.

In the first group are a relatively large number of carcinomas of the right half of the colon. Because of this I would call attention to the fact that carcinomas of the whole colon, in their earliest stages, in probably 95 per cent of the cases, have very few pathognomonic symptoms and usually are evidenced by change of intestinal habit or by intestinal irregularity,

\*From the Division of Surgery, The Mayo Clinic, Rochester, Minnesota. Read before the Minnesota State Medical Association, Duluth, July 14 to 16, 1930.



such as mucous diarrhea, or alternating periods of constipation and diarrhea. The obvious corollary to this is that one should have a thorough investigation of the gastro-intesti-

nal tract if change of intestinal habit or irregularity persists over a period of, for example, one week to one month. I am confident that this would obviate many of the disasters which one finds among patients who present themselves in the late stages of the disease, and in which formation of abscesses, penetration, perforation, or distant metastasis has taken place, precluding surgical intervention or, at least, limiting it to palliative measures. Pain and local tenderness over the cecal area, simulating subacute or chronic appendicitis, and without a tendency to disappear entirely, should call attention to the necessity of gastro-intestinal examination, because occasionally these are among the early symptoms to be found.



Fig. 1. Filling defect in proximal part of descending colon near splenic flexure. Carcinoma (surgically substantiated).



Fig. 2. Polypoid filling defect in distal part of descending colon. Adenocarcinomatous polyp (surgically substantiated).

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In the second group, namely, that characterized by anemia, is one element which is outstanding as a symptom of carcinoma of the right half of the colon; that is, profound anemia, with concomitant change in the entire

work; or it may be noted in the course of a general examination and may be without apparent cause. The exact explanation of this type of anemia is not clear, but it seems relatively certain that it is due to some perverted function of the mucous membrane which impairs it to such an extent that absorption of toxins results. The work of Whipple and Smith, Koons, and others, has called attention to this classical and almost pathognomonic picture. Sometimes the concentration of hemoglobin becomes as low as 25 per cent, and not infrequently I have been called on to attack surgical growths in the presence of a concentration of hemoglobin of 30 or 35 per cent. Characteristic of this also is the fact that these patients, with this blood picture, stand resection of the right half of the colon relatively favorably, indeed much more so than would a patient with the corresponding blood picture due to carcinoma of the stomach. So frequently does one find pro-

found anemia associated with growths of the right side of the colon that I am strongly of the opinion that no patients should receive a diagnosis of pernicious anemia until thorough

possible only in lean persons or in persons in whom the contraction of the lumen of the bowel produces such obstruction to the fecal current and peristaltic wave as to produce



Fig. 3. Obstructing carcinoma of descending colon at level of the left iliac crest (surgically substantiated).

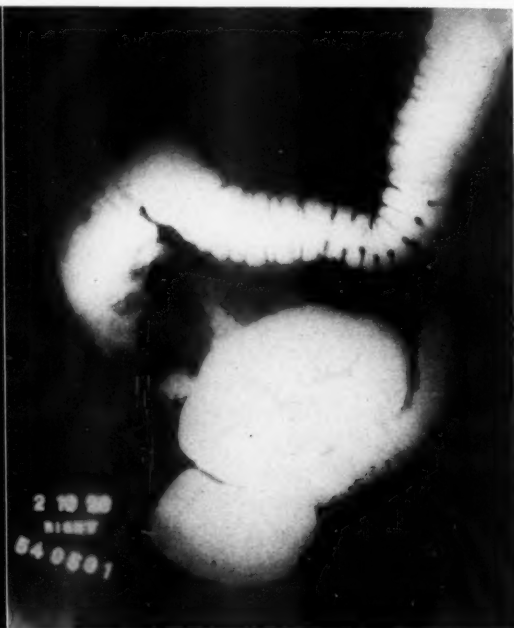


Fig. 4. Extensive filling defect in the cecum. Carcinoma (surgically substantiated).

examination of the entire colon has precluded the possibility of a malignant growth in the right half. It is an axiom that pernicious anemia should always be distinguished from anemia caused by carcinoma of the stomach, but I am confident, from my own experience, that there is far less likelihood of it being confused with gastric malignant growths than with colonic carcinoma.

Symptoms of malignant growths of the left half of the colon revolve around a syndrome of obstruction that is influenced by the scirrhous nature of the growths which have a tendency to encircle the bowel and to produce slow and progressive stenosis. Borborygmus and visual peristaltic movements are usually noted by most observers as being among the early symptoms. The borborygmus, associated with increased flatulence, may be accounted for by change in the intestinal contact, or it may be due to degeneration of the tumor or to obstructive changes which accompany stenosis. Visualization of peristaltic movement is

proximal dilatation with increased stenosis. The effort of the bowel to force its content through the intestinal lumen may be observed more clearly, and occasionally a definite point of stoppage may be noted. In addition, the character of the fecal content of the left side is different; it is formed and hardened. To detect tumefaction in the left half of the colon is much more usual than to detect it in the right half, probably because of its greater accessibility, but more likely because of its obstructive nature which dams back the content of the bowel and produces dilatation and obstruction. Progressive constipation occurs in a high proportion of these cases, probably in between 25 and 40 per cent, and should call attention to the presence of some mechanical stenosis in the majority of cases before roentgenologic evidence is sought. It is difficult, however, to define in any person exactly what constipation is. The direct question as to the number of stools each day may or may not elicit this information accurately, for a patient

is frequently inclined to consider his bowel movements normal whereas he may have gone to stool many times a day and, in fact, pays little attention to the early intestinal irregu-

occurs in the vast majority of cases of carcinoma of the colon, due to direct encroachment on the lumen of the bowel and dependent on the pathologic type and rapidity of the

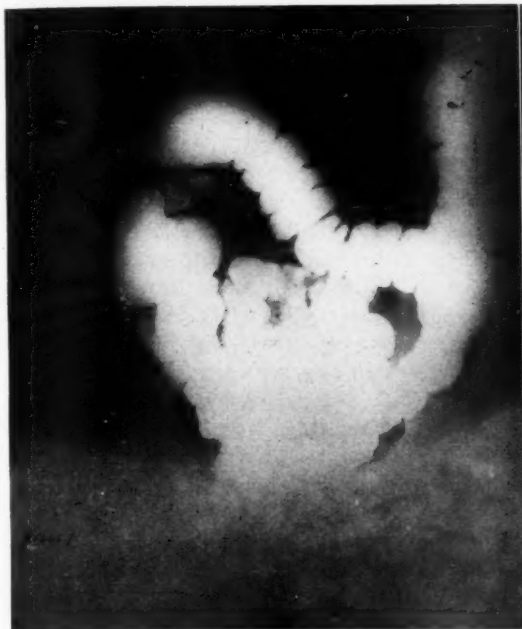


Fig. 5. Filling defect in distal part of ascending colon near the hepatic flexure. Carcinoma.



Fig. 6. Filling defect in proximal part of the ascending colon above the ileocecal valve. Carcinoma (surgically substantiated).

larity, be it of the variety of diarrhea or of constipation. However, again let me emphasize that the change in intestinal habit is the most important early symptom of carcinoma anywhere of the large bowel. Chronic diarrhea in an elderly person frequently proves to be due to a malignant growth. If the growth is on the left, Moynihan's axiom is strikingly true: "In left colonic growths, constipation is the rule, while in right colonic growths, constipation is rare." The aphorism of Morison in this regard is as follows: "Increasing constipation of recent origin in an elderly person, only overcome by purgatives, suggests malignant disease of the colon." This obstruction may be either of the acute or chronic variety. If it is in the former division, it may be due to volvulus, intussusception, plugging of the lumen of the bowel by a foreign body or to swelling due to an inflammatory process superimposed on the malignant condition. The chronic form of obstruction

growth. In the splenic flexure, obstruction of a chronic or subacute variety is present in 100 per cent of the cases. Fortunately, carcinomas of the splenic flexure metastasize slowly because of the scarcity of local lymphatic drainage, and although they are frequently complicated by perforation and abscess, if one can attack them by the primary operation, the ultimate prognosis is satisfactory. Obstruction of the acute variety occurs in about 5 per cent of the cases and represents a most grave condition, in that acute intestinal obstruction is superimposed on an already fatal condition unless it is relieved surgically. This type of intestinal obstruction usually appears out of a clear sky, without premonitory symptoms, and the patient and surgeon are confronted by a grave state.

There are two symptoms of carcinoma of the colon which are commonly noted in textbooks, and which I wish to call attention to briefly. They are melena and tenesmus.

Tenesmus is noted in direct ratio of frequency as the growth approaches the rectal sphincter; that is, the lower down the growth, the greater the irregularity of the bowel and the more



Fig. 7. Rather extensive filling defect in proximal part of sigmoid. Carcinoma (surgically substantiated).

severe the straining at stool and tenesmus. It is an untrustworthy symptom of colonic disease and, unless the growth is within reach of the finger, rarely is present at all, save when a subacute or acute variety of intestinal obstruction has developed. Blood in the stool, on the other hand, is the most common symptom of growths in the lower left side of the colon or in the upper part of the rectum. I have little confidence in the presence or absence of occult blood in the stool as a diagnostic measure. Blood in the stool or on the stool is of importance unless its presence is explained away. If it is bright red blood and persists in the stool or on the stool, unquestionably there is a local lesion which is distal to the splenic flexure. Blood in the stool rarely is noted when the growth is in the right half of the colon, even by the more delicate tests for occult blood, and I distinctly wish to minimize its importance diagnostically except as far as it forces persons to have a complete gastro-intestinal examination.

The most important advance in the diagnosis of colonic malignant growths has been the tendency of roentgenologists to improve their technic to such an extent that accuracy of observation and of diagnosis is rapidly approaching the point at which it parallels the splendid information now universally obtainable by roentgenologic examination of the stomach and duodenum.

Characteristic roentgenologic evidence of malignant disease of the large bowel is so accurate that in 102 cases of carcinoma of the large bowel, beyond the sigmoid flexure, examined and proved by exploration at The Mayo Clinic in 1929, an error was made in only three cases. This is a remarkable and most satisfactory record, comparable to the best figures in any series of gastro-intestinal diagnosis. A filling defect, or visualized interference with the integrity of the lumen of the bowel, is so pronounced in the majority of instances in which accurate preparation has been made that experience with the fluoroscope promises to continue this accuracy. Certain nonmalignant lesions of the colon exhibit the same phenomena, but when carcinoma is the etiologic factor, certain pathognomonic features are present, and because of the constancy of the occurrence of this filling defect in a case of malignant disease of the colon and its typical characteristics, the roentgen ray offers the only objective, accurate pre-operative diagnostic evidence at the disposal of physicians. The barium clysma, roentgenologically controlled, aided by palpatory manipulation and verified by roentgenography, is the method of choice for accurate detection of the situation of the filling defect and the precise interpretation of its characteristics. Although the defect shows on the roentgenographic films, it is much more desirable to make diagnoses fluoroscopically than to depend on the roentgenogram only. Occasionally, carcinoma causes complete obstruction to the barium enema, but usually one finds definite canalization which may be visualized. The rough, jagged contour of its margin, associated with the firm, knotty consistence of the mass, represent the cardinal differential characteristics. Generally speaking, the chief factor of error in roentgenoscopic diagnosis of colonic lesions is failure on the part of the



roentgenologist to procure adequate exposure of the involved loop of bowel. Strangely enough the sigmoid offers the most difficulty on this account because of its usually inaccessible situation in the bony pelvis and its frequently firm fixation by adhesions, usually of an inflammatory nature. Multiplication of anomalous coils likewise may complicate its visualization. Below the middle of the sigmoid, one should not depend on roentgenologic examination, but proctoscopic evidence is more easily and satisfactorily obtained. The right side of the colon imposes a peculiar difficulty to diagnosis by roentgenoscopy; its comparatively large lumen fails to show the striking degree of narrowing characteristic of the distal portion, and in the cecum particularly an extensive lesion may leave a large, rounded contour at its distal margin which may be misinterpreted as the tip of a normal cecum, in the absence of a definitely palpable tumor. Patience, diligence and care on the part of the examining roentgenologist, together with co-operation of the patient and clinician in securing the best possible preparation of the lumen of the bowel for examination, will aid materially in increasing the diagnostic evidences that are possible to elicit by the roentgenoscopic method.

To epitomize, then, the most important early symptoms of carcinoma in any portion of the colon are change in intestinal habit, as evidenced by irritability, mucous diarrhea, alternating periods of diarrhea and constipation, localized pain and tenderness without a tendency of them to disappear, tumefaction, profound anemia not accompanied by loss of blood, and obstruction of the acute, subacute or chronic variety. Given any of these suggestive phenomena, one should be urged to undergo immediately, at the hands of a competent roentgenologist, complete gastro-intestinal examination, with great assurance that the suspected lesion will be discovered. Let me add that loss of weight, cachexia, dehydration, and desiccation are not symptoms of carcinoma of the colon, but are symptoms of metastasis and impending dissolution, and to wait for such evidences to occur before suspecting a malignant condition and attempting to localize it by some means at hand is little short of being a party to fatal delay.

The prognosis in carcinoma of the large bowel, and the operative mortality, as compared with carcinoma of the stomach, impress one that with earlier diagnosis and more attention to preoperative and postoperative details, an increasingly large number of satisfactory three-year and five-year cures is being obtained.

At The Mayo Clinic it has been the custom recently to attempt to individualize patients with surgical conditions of the large bowel and rectum by segregating them into a group under the joint supervision of clinician and surgeon. This has resulted in the establishment of a routine preoperative preparatory stage which, in the majority of instances, has meant hospitalization, although with increasing experience we have come to recognize a distinct advantage in an ambulatory type of treatment for certain persons. The preoperative measures employed in this group of cases aim at (1) rehabilitation of the patient by decompression of the colon, and increase of the general resistance by introduction of large amounts of fluids, by blood transfusions and by other general hygienic measures; (2) insistence on a diet as free from residue as possible and consisting largely of carbohydrates, and (3) the use of an intraperitoneal vaccine (Figs. 1 to 7).

#### DISCUSSION

DR. W. J. MAYO (Rochester): Mr. Chairman: One of my colleagues has said that the first thing to do in examining a patient is to examine the rectum so that you won't forget to do it, and to do it anyway, even if it does soil your hand. With a rubber finger cot or a rubber glove, and a little soap, one can make a clean examination of the rectum.

Patients with carcinoma of the rectum so frequently come to us too late, merely because the physicians in whose hands they have been have not examined the rectum thoroughly. If the patient is placed on his back, with the thighs drawn up, one can introduce the finger and reach high. It is true that one cannot reach up to the sigmoid juncture through the rectum, but one can reach the greater part of the rectum and by combined rectal, vaginal and abdominal manipulation, an excellent diagnosis usually can be made which the x-ray can verify.

Again, I would like to say just a word in regard to colostomy. When I first began practice, colostomy had just come in as a common operation, and any patient who had a carcinoma of the rectum had a colostomy made and that was about all. Many a patient with incurable carcinoma of the rectum who would have gone

on with his work for months, if he had not had the colostomy, at once was put into condition in which he no longer could work. It is very rare that a patient with carcinoma of the rectum below the rectosigmoid juncture will suffer from obstruction, and colostomy, except for obstruction, is not usually to be considered. Of course, colostomy as a preliminary to a radical removal of the growth and the rectum is a necessary procedure.

I am reminded of a little story that I read of a small boy who was studying physics. He was shown with books under his arm. He found the gardener pulling the wheelbarrow behind him, loaded with various implements. The little boy said: "Why do you pull the wheelbarrow from behind instead of pushing it in front?" The gardener said: "I hates the sight of it so." People hate the sight of a colostomy.

Again, in regard to those cases in which you perform exploration, remember that glands are often enlarged from sepsis in carcinoma of the rectum, without cancerous glandular involvement and sometimes in such cases colostomy is done, and nothing more, because such enlarged glands are supposed to be carcinomatous. Unless you are very certain, you had better take a

gland out and have it examined microscopically for there are cases of cure after radical operation in which an enlarged gland was removed and did not prove to be carcinomatous.

One point more in regard to carcinomas of the rectum; that is removal of the carcinoma in a locally operable case in which secondary tumors are present in the liver. Patients with carcinoma of the rectum suffer dreadfully when the perirectal tissues, nerves and bladder are involved, but it sometimes happens that the metastasis is in some place in which it will not become septic, and in which the pressure on nerves will not be painful, and the patients may live for a long time. In such a case, if the growth is readily operable, in order to save the patient all of that suffering while he is waiting to die from metastasis, I never have hesitated to remove the rectum even in the presence of secondary growths in the liver or the lung.

It is astonishing how long such patients will sometimes live. I have removed comparatively small carcinomas of the rectum, when secondary nodules existed in the liver, and the patients have lived several years in comfort. If the primary carcinomatous growth is removed, the secondary growth may not progress so rapidly.

#### ATROPHY OF THE LIVER DUE TO CINCHOPHEN PREPARATIONS

When cinchophen was introduced into therapeutics (reinforced by the trade name "Atophan"—the tophi remover) its striking effect on the elimination of uric acid captured the clinical imagination. It was soon seen, however, that Atophan belied its name for the tophi refused to be removed. The drug was found, however, to be an effective analgesic. Various esters and derivatives were advertised extensively for the benefit of those who do not like the flavor of cinchophen and for the benefit of the manufacturers who could establish a monopoly on each little change. Cinchophen became a household remedy in the belief that it could do no harm. In 1923 evidence became available that the drug was causing fatal hepatitis. Since there are many other analgesics about as effective as cinchophen in many cases, and without this insidious danger, the use of the drug should be avoided whenever

possible. Unfortunately, this is not simple, for a physician may be easily led into prescribing cinchophen when he does not know it. He may avoid it under the official names of cinchophen and neocinchophen or the original, therapeutically misinforming names of Atophan and Novatophan, but can he be expected to keep in mind all the noninforming names which manufacturers invent? This illustrates the importance of the rule of the Council on Pharmacy and Chemistry which permits not more than one trade name—that applied by the discoverer. The rule protects those that use New and Non-official Remedies but can do little for others. The case is even worse for the patent medicines that are advertised to the public. While physicians, now that they have been warned, will restrict the use of cinchophen and watch for the first signs of danger, cinchophen preparations may be sold to the public in mixtures of secret composition. (Jour. A. M. A., August 2, 1930, p. 345.)

## THE EARLY DIAGNOSIS AND TREATMENT OF MALIGNANCY OF THE BREAST\*

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Minneapolis

IT HAS long been known that any material reduction in the mortality rate from malignancy of the breast must come through earlier diagnosis and treatment, rather than through refinement of surgical or radiological technic.

For years the medical profession has been trying to impress upon the public the importance of routinely examining the breasts and promptly reporting to the physician any departure from the normal.

Viewed from the standpoint of ultimate results, particularly those obtained from the large general hospitals, this education has proven a disappointment. We are still being presented with too many late lesions.<sup>18</sup> Unsatisfactory results are attributable to unnecessary and preventable delay in receiving treatment. Lane-Clapton<sup>23</sup> found that out of 1,493 patients with cancer of the breast applying within three years of the onset of symptoms, only a little over one-half did so within six months. The mean alleged duration of symptoms was just under nine months. Of 1,447 cases with microscopic reports, 73 per cent had axillary metastases when operated. In a series of 111 cases from the University and Minneapolis General hospitals, the average duration of symptoms for those reporting within three years was nine and one-half months.

In contrast to this, a source of encouragement is to be derived from the increasingly greater number of women who are presenting themselves with few symptoms and minimal findings. McCarty, Sistrunk, Bloodgood, Floyd and Haggard, and others have noted this changing clinical picture and have attributed it to the cumulative effect of educational efforts. Whereas twenty years ago 80 per cent of presenting cases were malignant, now in most clinics, especially breast clinics, the great majority are benign.<sup>6, 8</sup>

With this increase in the number of patients having few symptoms and minimal findings, there has been a corresponding increase in the

difficulty and the responsibility of the examining physician in correctly evaluating symptoms and advising the patient. This responsibility should be keenly felt when it is realized that, in its earliest and most curable form, malignancy presents few, if any, evidences of its presence.<sup>12</sup> It is a responsibility which cannot always be shifted to men especially trained to assume it, but must be accepted by the large group of practitioners. It is to this group of men that the following remarks are directed.

If one is to become proficient in the diagnosis of breast lesions, it is highly desirable that a system of examination be adopted and carried out routinely. The following commonly used method is recommended:

Without prejudicing his judgment by previous knowledge of the location of the lesion, the examiner has the patient remove her clothing to the waist and seat herself on a chair. Standing in front, he notes the relative size and weight of the two breasts, the presence or absence of dimpling of the skin, or retraction of the nipples. He inspects and palpates the supraclavicular region, noting the presence or absence of fullness and whether or not nodes can be felt.

The patient is then placed on a table with the head and shoulders slightly elevated and the hands locked behind the head. Standing at the head of the table, the examiner looks for tumor masses outlined in the breast or in the axilla, for the reddened eczematoid type of lesion of Paget's disease of the nipple, for dilated vessels beneath the skin, and for the "orange-peel" skin indicative of advanced malignancy.

The breasts are then systematically palpated against the chest wall with the flats of the fingers. Picking up the breast between thumb and fingers gives a false impression, as the normal breast lobulations then feel like tumor masses. Beginning with the periphery and finishing with the nipples, both breasts are palpated. The presence or absence of shotty or nodular areas, of definite solid or cystic tumor masses, is noted and, if present, recorded on a chart. The nipples are pulled for evidences of fixation and the areolar

\*From the Department of Surgery, University of Minnesota, Minneapolis. Read before the annual meeting of the Minnesota State Medical Association, Duluth, July 16, 1930.

area searched for worm-like masses produced by dilated ducts beneath the nipple.

Finding a definite tumor, its size, shape, and the sharpness of its margins are investigated. Its consistency is determined as nearly as possible, remembering that a tense cyst or a deeply placed cyst may feel like a solid tumor. Attachment to the pectoral fascia may be ascertained by having the patient press her clasped hands together across her chest to tense the pectoral muscles. By moving the tumor, early fixation to the pectoral fascia will be evidenced by restriction of mobility. Without fixation of the muscles, attachment of the tumor may be missed by motion of the muscle itself on the chest wall.

Early attachment to the skin can be demonstrated by puckering the skin around the tumor. This maneuver will produce dimpling over the most superficial and usually the hardest portion of the tumor.

Finally, the axilla and abdomen are palpated. Axillary lymph nodes are best felt by placing the patient's arm in partial abduction and inserting the finger tips to the apex of the axilla. Nodes are then felt to slip under the fingers as the hand is moved downward against the chest wall.

A relatively recent contribution to the technic of clinical examination is transillumination of the breast, as practiced and described by Cutler. A Cameron transilluminating electric lamp, which produces little heat, is placed underneath the breast. Inflammatory masses produce diffuse opacities which fade and disappear as the inflammation subsides. Solid tumors, benign and malignant, cast shadows depending on size and location; cysts filled with clear fluid are translucent. Traumatic hematomas cast dense shadows with fading margins. Intracystic or duct papillomas associated with a discharge of bloody fluid from the nipple present a uniformly circumscribed shadow. In cases with bleeding from the nipple where no tumor is palpable, the method is especially valuable in indicating the site of the lesion and determining whether there are multiple or single lesions. The method in itself does not differentiate malignant from benign lesions.

Having obtained all the available clinical information, the examining physician is ready to consider the diagnosis and method of treatment. He will be guided by two main considerations. First, every case of operable malignancy must

have the complete radical amputation. Second, as many breasts as possible should be saved.

Cases group themselves into (1) the obviously malignant; (2) the obviously benign, and (3) the indefinite group. The obviously malignant, presenting one or more clinical signs of malignancy (attachment to nipple, skin or fascia, or metastases), offer no difficulty in diagnosis. They are not early lesions and do not come within the scope of this paper. Fitzwilliams<sup>13</sup> has said, "Anything that has any characteristic of malignancy I no longer regard as early." If the complete operation is done in all such cases, very few unnecessary removals of the breast will occur.

It is well to remember, however, that certain benign lesions may simulate malignancy. True mastitis, and traumatic fat necrosis, may become attached to the skin. Any benign tumor situated beneath the nipple may become attached and, finally, lymphadenopathy of other than malignant origin may simulate metastases. If any of the above mentioned are suspected, it would be advisable to treat the patient as one of the indefinite group.

The obviously benign group is increasing in relative number. The percentage of benign lesions for which operation is not indicated will vary with the experience of the examiner. Bloodgood recognizes and does not operate upon 65 per cent of cases; Bartlett places 46 per cent of cases in the obviously benign group as cystic disease and is constantly increasing the percentage of those who are not operated; Johnson considered 61 per cent as safe without operation. The man with little experience will do well to place more cases in the indefinite group. If any doubt exists, at the cost of a small scar the patient may be assured of maximum protection and the physician relieved of his uncertainty through microscopic diagnosis.

The third, or indefinite group, constituting, according to McCarty, about 25 per cent of the whole, presents the greatest difficulty. In dealing with this group, nothing is more illogical than the far too common practice of observing a tumor until such time as its malignant character manifests itself clinically. The development of clinical signs is due to extension or to metastasis of tumor tissue. To urge women to report their symptoms promptly, and then to procrastinate until they have lost their best op-



portunity for a cure, is a gross inconsistency and an inexcusable betrayal of trust.

The exploratory incision meets the requirement of accurate diagnosis at an early stage. With the patient prepared for the complete operation, the tumor or suspected area, together with a generous amount of surrounding breast tissue, is removed through a small incision. Immediate diagnosis is made by frozen sections. In the event of malignancy, the wound is cauterized to destroy any loose tumor cells, and the complete operation performed. There is no evidence that this procedure reduces the patient's chance of a cure. There is considerable evidence that a delay between the time of local excision and complete operation diminishes this chance. Harrington showed that there is a 5 per cent better prognosis over a five year period where no interval elapses. Unless an operator has the facilities for frozen tissue technic and access to the services of a competent pathologist, cases in this indefinite group should be referred elsewhere.

Let us now consider a rational course of procedure based upon the various clinical pictures most frequently found. Authors of extensive experience disagree widely in their attitudes on certain clinical pictures and pathological findings. The following represent the writer's conclusions in the light of his own and the accumulated experience of others.

*Pain* in itself is of little or no value in the differential diagnosis of malignancy.<sup>8</sup> It is common in early benign, rare in early malignant lesions. Its principal value is in calling the patient's attention to a lump in the breast, and in sending her to a physician.

*Discharge from the nipple* may occur in either benign or malignant lesions.<sup>1, 14, 28, 29</sup> It is not, as sometimes thought, diagnostic of malignancy. In the absence of clinical signs of malignancy, a tumor associated with discharge from the nipple should be excised for diagnosis. The majority of such lesions will be intracanalicular papillomas or cystadenomas, but a few will be malignant. In the absence of palpable tumor, transillumination will often reveal the duct and small tumor from which the bleeding is occurring. This area should also be excised for diagnosis.

*Eczematoid lesions of the nipple* associated with a tumor beneath indicates Paget's cancer of

the breast and the radical operation should be performed.<sup>9, 30</sup>

In the absence of a palpable tumor, when the lesion on the nipple is very early, appearing more as an irritation, protective dressings may be applied in an effort to bring about healing.<sup>7</sup> If the effort is not entirely successful in three weeks, or if the lesion is well established at the outset, the nipple, areola, and a generous area of breast beneath should be excised and carefully examined for signs of cancer. In the absence of suspicious tumor in the duct region, no further operative procedure is indicated. The breast should thereafter be examined at frequent intervals.

*Tumors in women under the age of twenty-five:* Malignancy of the breast under the age of twenty-five is rare. If the dividing age be further reduced to twenty, there would seem to be no urgency in removing a tumor unless it is growing rapidly.<sup>7</sup> The most common single tumor occurring under the age of twenty-five is the encapsulated fibroadenoma. Fibroadenomas may undergo sarcomatous change. Later in life, complicating pregnancy, they may be wrongly diagnosed as carcinoma and cause the unnecessary loss of the breast. It is the writer's opinion that definite tumors are better removed. One should be very critical of the clinical signs of malignancy in patients under the age of twenty-five. In illustration of this point: A young woman presented herself at the University Hospital with a small hard tumor above the nipple zone and with enlarged hard glands in the axilla. On the basis of the rarity of carcinoma in her age group, a diagnosis of mastitis and tuberculosis of the axillary lymph nodes was made. Diagnostic exploration verified this original diagnosis and a breast with classical signs of malignancy was saved.

*Tumors in women over the age of twenty-five:* All single definite tumors in which the clinical signs of malignancy are absent should be removed and diagnosis immediately established by means of frozen sections. Such tumors will include various types of cancer, sarcoma, fibroadenomas, cysts of benign or malignant origin, localized areas of cystic disease, traumatic fat necrosis, and some inflammatory processes.

When inflammatory carcinoma of the breast is suspected, no operative procedure should be carried out. This type of cancer is so malignant

that surgery is contraindicated. Palliative x-ray treatment is all that can be offered.

The practice of aspirating a cyst to determine the character of the fluid is to be condemned on the grounds that cancer may exist in a cyst containing clear fluid.<sup>2, 3</sup>

Dilated ducts beneath the nipple, when bilateral and unassociated with definite tumor or retracted nipple, can be considered benign and kept under observation.

Multiple definite tumors, shotty or nodular breasts are usually manifestations of various types of cystic disease, commonly called chronic cystic mastitis.

Is cystic disease a precancerous lesion?

Evidence based on the microscopic examination of various types, particularly the adenocystic type in which epithelial hyperplasia predominates, has led many pathologists and surgeons to regard this disease as definitely precancerous and to recommend a simple amputation of the breast.<sup>11, 15, 21</sup>

Evidence based upon the follow-up of cases in which no operation, or local excision only, was performed, and in which over a period of years only the normal incidence of cancer occurred, has led others to consider the disease benign and to save the breasts.<sup>5, 6, 7, 8</sup>

In 1925 the writer, tracing cases from the records of the University Hospital and University Department of Pathology, found that no cancers had subsequently developed in cases for which no operation or local operation only for cystic disease had been performed. The writer feels that the rationale of treatment in cystic disease is based upon the difficulty in distinguishing between cystic disease and cancer rather than upon any predisposition to malignant change.

When both breasts are uniformly shotty or nodular, with no one area more definite and distinct than another, it would seem safe to forego operation. Mistaken diagnosis in such cases can do no real harm since bilateral diffuse cancer occurring simultaneously is incurable. Since cancer can occur in a breast containing diffuse cystic disease, any definite tumor present or arising in a diffuse indefinite process should be removed for frozen section diagnosis. Multiplicity of tumors is highly indicative of a benign process but does not rule out malignancy. The writer prefers to remove one or more of the most suspicious lumps. Since cancer developing in

such a breast will more easily escape early detection, simple amputation might be justifiably recommended for older women, in whom the loss of the breast is less of a misfortune.

Without operation, unilateral and localized areas of cystic disease should be infrequently diagnosed by those with limited experience. The differentiation between infiltrating cancer mastitis and cystic disease is too uncertain without the aid of the microscope.

Along the line of technic, the writer desires to point out a commonly disregarded principle which was long ago advanced by pioneers in surgery of the breast, namely: the tumor should occupy the center of the block of tissue removed. A common error is that of making the incision to fit the breast rather than to fit the tumor.

In conclusion, those physicians who have not acquired a thorough knowledge of breast lesions and their proper management are urged to do so if they are to fulfill their obligation to the community and to the profession.

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## MALIGNANT LESIONS OF THE KIDNEYS, BLADDER, PROSTATE GLAND AND TESTES\*

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A CONSIDERATION of malignant lesions of the urogenital tract necessarily includes malignant tumors of the kidneys, bladder, testes, epididymis, spermatic cord and penis. Since it would be impossible to consider the malignant lesions involving all of these structures in one short paper, I am concentrating on the group of lesions which appear with greatest frequency; I refer particularly to malignant lesions of the prostate gland, kidneys and bladder.

I might first say, briefly, that tumors of the epididymis, spermatic cord and testicular tunics are, for the most part, benign (approximately 70 per cent). Malignant tumors in these situations are almost exclusively sarcomatous. The growth of most tumors of the spermatic cord is extremely slow. They are not painful and frequently the patient is not aware of their existence until trauma calls attention to them. Similarly malignant tumors of the testes are relatively rare. They constitute a proportion of only 5.8 in each 1,000 of all malignant tumors in men, according to the mortality statistics of the registration area of the United States. Of even greater rarity are malignant tumors of the epididymis; these are more of academic than of clinical significance. Tumors presenting themselves in these areas should be removed surgically. It has been the practice in The Mayo Clinic to supplement surgical extirpation of malignant tumors from these areas with the application of roentgen rays to the regional lymphatics. There are in the records of the clinic many cases in which patients with malignant testicular tumors, graded 4, are living and well three years or more after such treatment.

### CARCINOMA OF THE PROSTATE GLAND

The most common cause of increase in size of the prostate gland is simple enlargement due to fibroadenomatous hypertrophy. The incidence of carcinoma of the prostate gland, compared with that of simple benign hypertrophy, is given by Thomson-Walker as 13.5 per cent, but in cases referred to the clinic, the relative propor-

tion of benign to malignant lesions of the prostate gland is somewhat greater.

The diagnosis of carcinoma of the prostate gland can be made, in most cases, by palpation of the gland by rectum. Such a gland imparts to the palpating finger an impression of nodular induration or stony hardness, fixation, and frequently of extension of the growth to adjacent tissues. The last characteristic gives the gland an ill-defined margin. Occasionally chronic infection producing prostatitis will increase the consistence of the gland to the extent that one may suspect it to be carcinomatous. Similarly, prostatic calculi of small or large size may change the contour, configuration and consistence of the gland, so that the erroneous impression is gained that a malignant lesion exists.

The most common symptoms of carcinoma of the prostate gland are frequency of urination and perineal pain. In the latter stages of the disease, urinary obstruction may occur. The frequency with which small but diffuse carcinomatous glands metastasize to bone must be remembered, for occasionally such painful metastatic growths may be the first clues to the presence of prostatic carcinoma.

In a study of 1,000 cases of carcinoma of the prostate gland, in which treatment was carried out at the clinic prior to January, 1925, Bumpus found demonstrable metastasis in 24 per cent of the cases. The most common sites of the metastasis were regional as well as remote portions of the lymphatic system, whereas the next most common sites of metastasis were structures of the bony pelvis.

In a consideration of the treatment of malignant growths of the prostate gland, it should be remembered that there are two distinct clinical forms. In the primary type, the gland may be said to have been carcinomatous from the beginning of the change, whereas in the secondary type the characteristics are those of benign fibroadenomatous hypertrophy with secondary malignant changes. It is in the second group that surgical removal of the gland has given the best results. Cases in this group form no small per-

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centage of all cases of carcinoma of the prostate gland and their incidence has been reported by Albarran and Hallé to be 14 per cent and by Thomson-Walker to be 18 per cent among the cases of prostatic carcinoma seen by them. In a follow-up study of ninety-six cases in which prostatectomy was performed and in which malignant portions were found on examination of the gland, Thomson-Walker reported that malignant growth had recurred in only 3 per cent.

It has been the custom at the clinic to advise and to carry through prostatectomy, either by the suprapubic or perineal routes, in cases of prostatic enlargement due to carcinoma whenever there has been sufficient evidence that the carcinomatous process has not extended too widely beyond the periphery of the gland. This of course automatically eliminates from consideration for prostatectomy any cases in which metastasis has occurred. On a few occasions a gland which had the appearance of being the site of early carcinomatous enlargement, when removed proved to be affected by simple prostatitis or prostatitis with calculi. In other cases, particularly in cases of carcinoma of the primary type, removal of the obstructing portion of the gland, although it does not completely remove the carcinoma, often will relieve urinary obstruction and dysuria for months, and sometimes for years, before cystostomy becomes necessary. In cases of unremovable carcinomas of the prostate gland, permanent suprapubic cystostomy not only serves to relieve the urinary obstruction but may furnish the patient many months of comfortable life. It may or may not be combined with treatment by radium, but in our experience it has been difficult to evaluate the effect of radium in such cases. In many cases of carcinoma of the prostate gland the only symptom is perineal pain. The value of roentgen rays applied through the perineum, as a method of relieving some of these patients of their perineal pain, should be stressed. However, if relief is not obtained, extirpation of the hypogastric ganglia, as suggested by Learmonth, is worthy of consideration.

In an evaluation of the results of treatment for malignant disease, the characteristics of the malignant lesion, its situation, its rapidity of growth, its extension into surrounding structures, and its tendency to metastasize, must be considered. In the treatment of malignant disease of a given situation, one should be concerned not

only with the desire completely to eradicate the malignant process but also should be on the alert to remove or destroy recurrences at an early time and to relieve obstruction and pain.

It is to be expected that in patients with primary carcinoma of the prostate gland, life will not be prolonged as much as in cases of secondary involvement. Yet, even in inoperable cases, the relief of urinary obstruction by introduction of a suprapubic cystostomy tube is of distinct benefit to the patient. Besides, there is an occasional suitable case in this group in which operative removal of the gland will be followed by good results. Of 164 patients with carcinoma of the prostate gland, who were operated on at the clinic, and concerning whom records are available, Bumpus found that thirty-five were still alive in 1925 and that twenty-one of them had lived longer than five years. The best results following enucleation of the carcinomatous prostate gland will be in the cases of so-called secondary carcinoma, if metastasis has not occurred. In a study of sixty-six cases, in each of which a prostate gland with malignant portions was enucleated, Thomson-Walker found evidence of recurrence of the carcinoma in only 3 per cent. Much depends on the proper selection of cases for the various procedures. Experience in handling such cases will aid in making choice of the best method of attack.

#### MALIGNANT TUMORS OF THE KIDNEYS

Adenocarcinoma or hypernephroma constitutes practically all malignant tumors of the kidney, with the exception of the primary squamous-cell epithelioma of the pelvis of the kidney, which in proportion to the adenocarcinomas exists in the relation of from 1:11 to 1:14.

Sarcoma of the kidney is relatively rare. In an unselected group of 225 cases of malignant tumor of the kidney in which operation was performed at the clinic, only ten of the tumors were sarcomas. The assumption that sarcoma of the kidney occurs chiefly in young adults has not been borne out in our experience. For example, eight of ten patients with sarcoma of the kidney were adults, whereas the tumors in a series of thirteen children with malignant tumors of the kidney were reported by the pathologist as adenocarcinoma, sarcoma and Wilms' tumor.

Lumbar pain, the presence of a tumor in the region of the kidney and hematuria are the triad

of symptoms present in practically all cases of malignant tumor of the kidney. In a group of 367 cases of carcinoma of the renal cortex reported at the clinic by Judd and Hand, one of these symptoms was present in 99 per cent.

Adenocarcinoma of the kidney is associated with tortuous, dilated veins in the fatty capsule surrounding the lesion. In the early stages, adenocarcinoma is limited to the poles of the kidney and as the lesion extends by growth the entire kidney may be involved. Later, the capsule may be broken through and the perirenal tissues become involved, extension sometimes occurring into the renal veins. When metastasis occurs, it involves the lungs, the lymph nodes, the liver, the skeleton, the brain, the spinal cord and the pleura, in decreasing frequency in the order named.

In 192 cases of malignant tumor of the kidney in which nephrectomy was performed, the average duration of symptoms before operation varied from seventeen to twenty-one and a half months. Ninety-one of the 192 patients on whom nephrectomy was performed are still living, and yet the average duration of their symptoms before operation varied from thirty to forty months. In a series of 250 cases in which nephrectomy was performed for adenocarcinoma of the kidney at the clinic, twenty-six patients have lived ten years or more. The association of lumbar pain, enlargement of the kidney and hematuria in more than 99 per cent of cases of malignant tumor of the kidney, and the fact that the duration of life and the completeness of cure are proportionate to the degree of malignancy and the size of the malignant lesion of the kidney should serve as a plea for earlier diagnosis and treatment of this lesion after conclusive proof of its existence has been established.

It is probably unnecessary to emphasize the absolute necessity of cystoscopic examination of patients with hematuria. In the presence of such a history, the burden of proof that a malignant tumor is or is not present in the bladder or in the kidneys lies directly on the examining physician, and the only accurate method of determining or of eliminating these possibilities is by cystoscopic examination and the other refinements of urologic diagnosis, such as pyelography. If there is a question with regard to the nature of the lesion in the bladder, a specimen should

be removed for microscopic diagnosis at the time of the cystoscopic examination.

I am observing a patient in the hospital at the present time whose condition illustrates the foregoing points. The patient had been in perfect health until two months ago, when he noticed gross hematuria on two occasions. Subsequently, the urine became clear, although a few erythrocytes were found in the urinary sediment on microscopic examination. Cystoscopic examination revealed a normal appearing bladder. A pyelogram of the right kidney was negative, and that of the left showed obstruction at the ureteropelvic juncture. Exploration of the left kidney was advised and after a great deal of persuasion because of the absence of symptoms, with the exception of hematuria, and his opinion that he was in excellent health, the patient gave his consent for operation. The interior of the kidney was filled with papillary squamous-cell epithelioma, which was confined entirely to the pelvis and calices, and nephro-ureterectomy was done. The prospects for permanent cure in this case are excellent, due to the early recognition of abnormality in the kidney and the complete removal of the kidney as well as the path of the extension of the papillary squamous-cell epithelioma down the mucous membrane of the ureter.

Papillary squamous-cell epitheliomas of the renal pelvis are relatively uncommon as compared with the solitary cortical tumors, as has been previously stated. Squamous-cell epitheliomas differ in degree of malignancy, as do all malignant tumors. The degree of malignancy may be accurately determined by Broders' index. The tendency of papillary epithelioma in the renal pelvis to extend directly along the mucous membrane of the ureter to the bladder necessitates ureterectomy at the time or soon after the removal of the affected kidney. This tendency of direct extension down the ureter, rather than metastasis to distant structures or invasion of perirenal tissues, makes papillary epithelioma of the renal pelvis less malignant than the cortical tumors, degree for degree.

In summarizing this brief consideration of malignant renal tumors, I wish to emphasize again the truly excellent results which have followed nephrectomy. Quoting again from the statistics of the clinic as summarized by Judd and Hand in a group of 283 unselected cases of

malignant tumor of the kidney in which nephrectomy was performed, in 106 cases the patients lived from three to twenty-two years, whereas ninety-one patients (almost 33 per cent) are living and well an average of more than five years after operation.

It has been found difficult in the clinic to estimate the value of roentgen rays and radium, or both, as additional aids to surgery, since these are agents used only in cases in which there is extensive involvement of the perirenal tissues and in which it is felt that all of the tumorous tissue has not been removed.

#### MALIGNANT TUMORS OF THE BLADDER

Epitheliomas comprise approximately 95 per cent of the lesions of the bladder. They vary in degree of malignancy (grades 1 to 4). The most common symptom of a malignant tumor of the bladder is hematuria, although frequency of urination and dysuria may lead the patient to seek diagnosis before gross hematuria is noted. The necessity for a cystoscopic examination, the elimination of the kidneys as the source of the bleeding and the removal of a specimen from a suspected lesion for microscopic examination are obvious. Methods of treating malignant tumors of the bladder should depend on their relative degree of malignancy, their size and their situation. Most tumors of the dome or lateral and posterior walls of the bladder are operable and lend themselves readily to excision or resection. If a lesion situated in one of these areas is of a high degree of malignancy, that is, graded 3 or 4, and is infiltrating, segmental resection is indicated of that portion of the bladder and also of the normal portion of the bladder for a distance of at least 1 cm. at the periphery of the growth. On the other hand, tumors of lower degree of malignancy often lend themselves to local excision or, if of small size, to electrocoagulation through the cystoscope. Tumors in the base of the bladder are usually not resectable because of involvement of one or both ureters. Lesions of a low degree of malignancy involving this area can many times be completely and permanently eradicated by the employment of the actual cautery or by electrocoagulation. Bumpus reported a series of thirty-six cases in which extensive inoperable tumors of the bladder involving the

base and the ureteral orifices were destroyed by cautery; seven patients in this series have lived for more than four years and one has lived for nine years. There is no doubt of the value of the transvesical electrocoagulation of tumors involving the base of the bladder, especially if they are highly malignant.

In a group of fifty-one cases of this type with involvement of one or both ureteral orifices or the internal urethral orifice, twenty-two patients have remained free from recurrence from six months to more than three years. Comparable results in similar cases by electrocoagulation were reported in the symposium of tumors of the bladder by Kretschmer at the 1930 meeting of the American Medical Association.

The tendency of malignant tumors of the base of the bladder to obstruct the ureteral orifices, with resulting degeneration of the renal parenchyma, has led to a critical estimation of the value of external ureterostomy, bilateral nephrostomy or ureteral transplantation into the sigmoid. The excellent results obtained by the transperitoneal method of ureteral transplantation into the sigmoid at low operative risk by the C. H. Mayo method in cases of exstrophy of the bladder, the bilateral simultaneous uretero-sigmoidal implantation described by Coffey, and the extraperitoneal transplantation of Cabot have reawakened interest in this method of treating extensive inoperable tumors involving the base of the bladder which have not responded to direct methods of attack. After the transplantation of the ureters in these cases, the use of massive doses of radium or of complete cystectomy offers the possibility of cure of the malignant disease, provided metastasis to the regional lymph nodes has not occurred, and at least offers relief from the distressing dysuria and hematuria for which patients seek relief.

Small tumors of the bladder of a low degree of malignancy are often best treated by electrocoagulation through the cystoscope. If the tumor is highly malignant and not large, transurethral electrocoagulation can often be done satisfactorily for it has been frequently demonstrated that malignant cells cannot withstand abnormally high degrees of heat.

Following the treatment of the malignant lesions of the bladder, patients should be ex-

amed at regular intervals, usually every three months the first year and every six months the second, to determine whether or not the tumor has recurred. This can only be determined by cystoscopic examination. Such recurrence or extension of the tumor usually occurs in the form of small implants and can be easily destroyed by electrocoagulation carried on through the cystoscope.

The results of treatment of epithelioma of the bladder in which curative surgical measures were carried out in the clinic in 370 cases have been summarized by Hunt. The study indicated that results are dependent on the site of the tumor, its extent, and the degree of malignancy. In cases in which the malignant lesions were graded 1 or 2, and in which the lateral walls of the dome were involved, 73 per cent of patients were living and well three or more years after operation, whereas 50 per cent of patients with tumors involving the base of the bladder of similar degree of malignancy had been without recurrence for a similar period. In cases of the most malignant tumors, graded 3 or 4, there is proportionate or corresponding decrease in good results of treatment. In 42 per cent of cases in which the tumors were graded 3 or 4 and in which the lateral walls of the dome were involved and in 25 per cent of cases of corresponding degrees of malignancy in which the base of the bladder was involved, the patients have been without recurrence for a period of more than three years.

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## DISCUSSION ON SYMPOSIUM ON THE DIAGNOSIS AND TREATMENT OF CANCER

DR. W. J. MAYO (Rochester, Minn.): We think of cancer in connection with man, but all living things, plant and animal, suffer from analogous conditions at some point in the bodily structure at which their condition of life or habits interferes with the protective mechanism. The late Dr. Erwin Smith, in the Department of Agriculture at Washington, made a life study of plant cancer and discovered certain microorganisms which appeared to be its cause, or which at least prepared a field for its development. The theory that cancer in man was due to a microorganism which entered the human body at some point of local lesion was at one time very popular and many supposed germs, bacterial or protozoa, were discovered. This theory, on further investigation, was discarded. If parasitic agents are the cause of cancer, why, for instance, are metastatic growths in the liver from cancer of the stomach, not cancer of the liver? As a matter of fact, they are cancers of the stomach in the liver. Obviously the diseased cell from the original tumor has been transplanted to the liver.

In a consideration of the development of cancer, three facts are closely related: (1) a local point of origin; cancer never appears in sound tissue, (2) there is a change in the cells of the part affected, and (3) a striking variation in the susceptibility of persons to the development of cancer; in some, under no conditions, will the disease develop; in others, it appears on the slightest provocation. In relation to this third fact our ultimate hope is that some method may be evolved whereby low resistance may be raised to high resistance, or even immunity may be established.

The local lesions in which the effectiveness of the bodily protection has been reduced, fall into three types: (1) small tumors, moles and warts, and neoplasms which are not originally cancer but may become so; (2) injuries (sarcoma often follows on the site of a contusion), and (3) most common, chronic irritation.

Investigation of the various theories of the causation of cancer shows that the one provocative agent which remains unchallenged is chronic irritation. In all lands, among all peoples, we see this one causative influence in the ascendant. In China, among those who shave their heads with a dull and rough-edged razor, cancer of the scalp is common, but does not occur among those who do not shave the scalp. The Chinese men eat at the first table, when the rice is hot, throwing it with some force by means of chopsticks into the mouth and pharynx, and not infrequently they suffer from cancer of the pharynx and of the beginning of the esophagus. The women, who eat at the second table, when the rice is cold, seldom have the disease. In Australia the sharp-edged sand in the desert portion of the country, blown by the hot wind, so frequently produces cancers of the skin of the face that such cancers are called the "Australian disease." In certain parts of India and the Philippines, where the betel nut, wrapped in its leaf with lime, is chewed, cancer of the mucous membrane of the cheek is still common.

Among smokers, cancer of the lip sometimes develops, less commonly since heat-conducting clay pipes are no longer used. Cancer of the gums and about the teeth is less common now that by modern methods of dentistry irritating stumps and roots may be removed. Cancer of the breast occurs largely among civilized women. In those countries in which the breasts are allowed to be exposed, that is, are not compressed or irritated by covering, it is rare. In the mountain regions of Kasmir, India, where the people carry braziers filled with hot coals strapped onto the lower part of the abdomen, in going from the valleys into the cold mountains, cancer just above the pubes is common.

With improvements in construction of buildings and changes in fuel, there are no longer many chimneys which require cleaning, so that chimney-sweep's cancer of the groin is less common, but we still see an occasional cutaneous epithelioma on the shins of railroad engineers and firemen whose legs have been exposed during years to the intense heat of the engine firebox.

I have merely touched on those few outstanding examples of cancer of visible parts of the body about which there is little dispute. As to cancer of the interior of the body we have less definite proof. Cancer in the internal protective mechanism of the body is encouraged by injuries to the local protective mechanism. Cancerous gallbladders usually contain stones. Gallstones are three times as common in women as in men, and cancer of the gallbladder is found in about the same proportion.

That ulcer of the stomach or some analogous condition may be responsible for cancer of the stomach is admitted by all, although there are great differences of opinion as to the frequency of cancer from this cause. Hurst has given statistics to show that in about 20 per cent of cases of ulcer of the stomach, cancer may be expected. In our experience, although the percentage in which the histologic examination of excised cancer of the stomach for evidence of preceding ulcer varies in different series of cases, evidence of the development of gastric cancer on some type of demonstrable precancerous disease, such as ulcer, is present in more than 25 per cent. Ulcer of the stomach will be revealed by a considerable percentage of resections for cancer of the stomach.

Cancer of the stomach is rather rare in uncivilized races and in animals. It is the base of nearly a third of the total number of cancers of civilized man, and perhaps taking foods and fluids too hot, hotter than can be held comfortably in the mouth, may have something to do with this.

Cancer of the ovaries is common, and cancer of the testis is uncommon. The testis is the primitive organ from which the ovary is derived, and has a greater resistance than the ovary, just as the small intestine, by reason of its primitive character, has greater resistance than the large intestine and rectum.

Both the uterus and the breasts are most likely to undergo cancerous change at about the period of meno-

pause, indicating that the age of senile cells acts as an invitation to the disease.

As bearing on the question of heredity and susceptibility, it is interesting that although there is great variation as to the organs affected, in the statistics from various civilized countries, the total percentage of those who have cancer for the same age periods is about the same.

In thinking of cancer we must keep clearly in mind the distinction between a local lesion which may undergo malignant change, but which is as yet without cellular alteration, and those conditions which we speak of as "precancerous," in which cellular changes have taken place, but which have not invaded the surrounding tissues in characteristic fashion.

The lesson that is to be learned is that local lesions which give opportunity for cancer are to be cared for early, that precancerous lesions are to be taken care of skillfully, and that treatment of early cancer either by the knife or radioactive agents, alone or combined, gives a high percentage of cures (79+ per cent).

In conclusion, I will touch on the fear of cancer which is so prevalent as frequently to cause patients to delay examination of a tumor or suspicious area because they believe that cancer is incurable. Of patients operated on before metastasis has taken place, nearly 80 per cent are cured permanently. Unfortunately the man who has been cured of cancer conceals the fact as he would a prison sentence, because he understands that it would interfere with his future advancement, whereas those who seek medical aid too late cannot conceal their condition, and therefore the laity form an exaggerated idea of the hopelessness of the disease.

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DR. E. STARR JUDD (President-elect, American Medical Association): Mr. President and members of the Minnesota State Medical Association: I have been very much interested in this symposium on carcinoma.

The first paper I heard was that by Dr. Campbell, and I think that he brought out the most important points in the early diagnosis of carcinoma of the breast. We have long realized in the clinic that if we found a tumor of the breast to be attached to mammary glandular tissue or to the skin that this finding established the diagnosis of carcinoma and Dr. Campbell has brought this out especially well today.

If one looks back in the old textbooks, or in some of the modern ones, he will find that serosanguineous discharge from the nipple is considered to be a positive sign of carcinoma of the breast. Dr. Dean Lewis called our attention to the fact that unless this symptom is associated with a tumor of the breast, carcinoma probably is not present. In other words, if there is tumor of the breast, and bleeding from the nipple, carcinoma is probably present; if there is no tumor in the breast in the presence of bleeding or serosanguineous discharge from the nipple, then the condition is more likely to be due to intracanalicular papilloma, which is practically always benign, or else it is due to chronic cystic mastitis.

There are two points in Dr. Walters' paper that I want to mention. One regards tumors of the testis. All of the tumors of the testis for which I have operated have been of the Ewing type. Ewing called attention several years ago to the fact that all tumors of the testis are really teratomatous, or mixed-cell tumors. Some of them are predominately sarcomatous; that is, connective tissue elements predominate. In others, endothelial cells predominate. All of these tumors are malignant. They metastasize to the lymph nodes in the retroperitoneal region. It is not necessary to perform radical removal of the cord and the retroperitoneal lymph nodes. Removal of the testis, followed by roentgen therapy over the posterior lymph nodes, frequently will give eight to ten years of comfort. Some patients seem to have been cured. If there is recurrence of the testicular malignancy in the retroperitoneal lymph nodes, it will frequently respond to treatment by roentgen rays and the patients can be made comfortable for a long time.

The other subject I want to discuss in Dr. Walters' paper is carcinoma of the prostate gland. I think that we owe a great deal to the late Dr. Geraughty, who was a St. Paul boy and who worked in the Brady Institute. He added much to our knowledge of the pathologic changes in the prostate gland. Carcinoma of the prostate gland invariably originates in the posterior lobe. In association with the carcinoma there may be adenomatous hypertrophy. Besides doing as Dr. Walters recommended, I think suprapubic cystostomy and removal of the benign adenomatous hypertrophic tissue frequently will enable the patients to urinate and to get along fairly well for a number of years.

## THE EFFECT OF LIVER AND LIVER EXTRACT UPON THE SYMPTOMS AND SIGNS REFERABLE TO THE NERVOUS SYSTEM IN PERNICIOUS ANEMIA\*

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**L**ESIONS of the central nervous system are extremely common, in pernicious anemia, occurring, for instance, in Waltman's series of 150 cases in something over 80 per cent. They lead to serious effects which often incapacitate the patient or actually endanger his life.

A matter of great importance in the treatment of pernicious anemia by liver, as developed by Murphy and Minot, is the effect of this treatment on the combined degeneration of the spinal cord or funicular myelitis or myelosis, as Henneberg calls it. During the last few years many reports have been published on the subject but it is possible to refer to only a few at this time.

Minot suggested in the first report on the treatment of his 105 cases that the nervous symptoms might improve. Others, such as Sturgis and Isaacs, Ordway and Gorham, McAlpine, and especially Syderhelm are pessimistic. Syderhelm goes so far as to say that the liver diet has no effect on the symptoms referable to the combined degeneration, and that in spite of relief from anemia the disease progresses to a pernicious myeloencephalotoxicosis.

There are, however, an increasing number of reports in the literature which show that remarkable or even phenomenal improvement may take place both in the symptoms and signs referable to the lesions in the nervous system. One of the most striking cases has been reported by Bubert. Schilling, reviewing his eighty cases of pernicious anemia treated by liver, states without details, that improvement in nervous symptoms frequently occurred. A careful study has been published by Ungley and Suzman in *Brain* for September, 1929. They review sixty-one cases of pernicious anemia, all of which showed nervous symptoms and 30 of which were treated by liver. In 63.9 per cent

the first symptom was referable to the nervous system. I shall not recount the various symptoms and signs in their series, but be content with the statement that the symptoms were referable to lesions in the posterior columns, the lateral pyramid tracts or to combined degenerations. Of the thirty patients treated with liver, seventeen improved, eight were unimproved and five died. Of the thirty-one patients that were not treated by liver, three were unimproved and twenty-eight died. Eight of the seventeen patients that improved are at work. Numbness and tingling present in all thirty cases disappeared completely in ten. Girdle sensation disappeared; incoördination and ataxia disappeared in ten cases. Changes in cutaneous sensation, present in twelve, became normal in eight. Astereognosis, present in two, disappeared in one. The knee jerks remained unchanged. Babinski reactions, present in nine, disappeared in five. Disturbances of micturition, present in seven, disappeared in six. These, we think, are the most encouraging figures published up to the present time, although by McAlpin they are considered optimistic.

We can summarize briefly the results that we have observed in forty-four cases of pernicious anemia with nervous symptoms, treated by liver and liver extract.

Among these forty-four cases, there were examples of practically all of the common symptoms and signs referable to the nervous system in pernicious anemia; and in addition some manifestations that are decidedly rare.

Numbness and tingling occurred in thirty-five, absent or diminished vibratory sense in thirty-three, weakness in forty-five, ataxia in twenty, Romberg's sign in fifteen, spasticity in nine, hyperreflexia in seven, hyporeflexia in nine, plantar extension in ten, disturbed cutaneous sensibility in eight, sphincter disturbance in seven, psychic disturbances in eight, loss of potentia in five, paralysis of the diaphragm in one.

Though all of the patients have been treated

\*From the Department of Medicine of the Johns Hopkins University, School of Medicine, Baltimore. Read before the annual meeting of the Minnesota State Medical Association, Duluth, July 14, 1930.

with liver, or a combination of liver and liver extract in large amounts, it has not been possible to follow all of them accurately, or for a sufficient period of time, to determine what result the treatment may have had; for the duration of treatment has seemed to us of great importance as affecting the continued and satisfactory improvement of symptoms.

For convenience we have considered the results of treatment in three groups of cases. The first group comprises those cases that have been treated by liver or liver extract for less than six months; the second group comprises those cases that have been treated for more than six months; and the third group comprises eight cases of outspoken combined degeneration that have been treated for ten months.

In the first group there were twenty-one patients who were treated for less than six months. Exclusive of improvement in weakness, an observed improvement took place in the signs and symptoms in 31.25 per cent. In the second group, comprising the patients that were treated for more than six months, there were twenty-three cases. In this group, improvement in both the nervous symptoms and the signs referable to involvement of the nervous system was more frequent and occurred in 55.17 per cent. In the third group, consisting of the eight cases of outspoken subacute combined degeneration which were treated for more than ten months, the improvement was frequently remarkable and occurred, according to symptoms and signs, in 58.93 per cent.

The definite improvement or disappearance of such objective signs as spasticity, plantar extension and changes in cutaneous sensibility which occurred frequently in these groups of cases must lead to the conclusion that some regression has taken place in the lesions affecting the nervous system.

Another point which has impressed us is the rapid return of symptoms and signs when the liver is reduced or is actually omitted from the diet. This has occurred in several instances, and we have noted a second period of improvement when proper amounts of liver were added to the diet. We have further observed the most favorable results in those patients who have conscientiously consumed large quantities of liver and liver extract daily.

We have thought that 400 grams of liver daily, or its equivalent, was essential, and many patients have taken more. Furthermore, the patients whose blood counts have remained above or about 5,000,000 are the ones who have shown the most pronounced and the most continuous improvement.

When one considers the results of treatment by liver obtained in such a series of patients, it becomes evident that the changes in the central nervous system in pernicious anemia are not always irreparable. This seems to be true, even though the symptoms and signs have been present for weeks, or sometimes months, before treatment is instituted. We know now, as Henneberg has pointed out, that the lesion is not a sclerosis but a focal degeneration of the myelin sheath or of the axone which, as the process increases, spreads upwards in the posterior column and down in the pyramidal tracts. According to Henneberg, the lesion is different from that in tabes, inasmuch as the posterior roots are not involved. An increase in glia fibers, such as one sees in multiple sclerosis, does not occur; and all authorities are now agreed that the lesion is entirely of a degenerative nature.

There is still dispute as to whether the axis cylinder or the myelin sheath is first involved. There is also considerable evidence being accumulated to show that the lesions are by no means confined to the spinal cord. A few cases have been described in which anatomical lesions were found in the peripheral nerves and brain. Mathieu, reporting a case of pernicious anemia showing changes both in the peripheral nerves and spinal cord, suggests that the weakness and alterations in cutaneous sensibility may, in many cases, be due to peripheral neuritis. McAlpine, in discussing the matter recently, has called particular attention to certain symptoms and signs affecting the cutaneous sensations and reflexes that can be best explained as due to peripheral neuritis. It has further been suggested that the process is somewhat analogous to beri-beri and to pellagra, in which degenerative lesions have been observed in the spinal cord as well as in the peripheral nerves. Psychoses, usually manifested by depression, and ideas of persecution are not uncommon in pernicious anemia, and occurred in a fair proportion of



our cases. A view, therefore, which is rapidly becoming prevalent is that, in pernicious anemia, all parts of the nervous system may be affected, peripheral nerves, cord and brain.

One view as to the cause of these lesions, which has recently been advanced, is that the changes in the nervous system are dependent, as they are in beri-beri, upon a vitamine deficiency. Indeed, as one studies these cases of pernicious anemia, as well as the cases of sprue, it seems more and more probable that the defect which brings about the symptoms is analogous to a vitamine deficiency, or at least some deficiency which is supplied by liver or liver extract, by meat digested with normal gastric juice, or by the normal gastric mucosa of such animals as the pig. It is known that the immediate cause of beri-beri, and probably of pellagra, is a deficiency of vitamine B, and it has been shown further by Cogwill and by Gilder, Kattwinkel and Castle that lack of the anti-neuritic principle of vitamine B in the diet will result in extensive multiple degenerations of the peripheral nerves, spinal cord and brain, in dogs. These experiments suggested to them that, in some way vitamine B deficiency might be accountable for the alterations in the nervous system in pernicious anemia. We have been told, indeed, that for many years some practitioners have used yeast in the treatment of their cases of pernicious anemia with nervous symptoms. Recently, however, we have seen one such case in which yeast had been substituted for a time for liver, but with rapid progression of the nervous symptoms.

It seems, therefore, that there is considerable evidence to show that, in pernicious anemia, acute degenerations may occur not only in the spinal cord but in the peripheral

nerves and brain; and, though these are analogous to the changes occurring in beri-beri and other forms of vitamine deficiencies, there is no direct evidence to indicate that vitamine B deficiency is the cause of the lesions in pernicious anemia. It has, however, been amply demonstrated that large amounts of liver, administered over long periods of time, will bring about remarkable improvement in the symptoms and signs referable to the lesions in the nervous system in pernicious anemia.

#### CONCLUSION

Forty-four cases of pernicious anemia, in which there were symptoms referable to changes in the central nervous system, have been treated by liver or a combination of liver and liver extract.

Of twenty-three cases followed for more than six months, improvement in symptoms and signs has occurred in 55.17 per cent. In twenty-one cases treated for less than six months, improvement was noticed in only 31.25 per cent. In eight cases of outspoken combined degeneration, treated for more than ten months, there was improvement of symptoms and signs in 58.9 per cent.

It is essential that large quantities of liver, or liver and liver extract, be employed over long periods of time.

When the amount of liver is much reduced, or dispensed with, relapses may occur promptly.

It seems probable that in pernicious anemia the myelin degeneration may occur in the peripheral nerves and brain, as well as in the spinal cord, and that some of the symptoms and signs which undergo improvement are referable to a peripheral neuritis.

## THE TREATMENT OF PSORIASIS VULGARIS WITH INTRAVENOUS ADMINISTRATION OF ACRIFLAVINE\*

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IN 1928 Professor M. Oppenheim of Vienna reported the successful treatment of psoriasis with intravenous injections of trypaflavine combined with ultraviolet irradiation. Injections of this dye, an aniline derivative (acriflavine hydrochloride), were shown to have a strong photosensitizing effect, and were given as a means of increasing the value of the actinic rays.

The following year through the courtesy of Dr. J. S. Biehn of the Abbott Laboratories we were furnished with a purified neutral acriflavine suitable for intravenous use. Later, because of the toxicity of the neutral salt, this was replaced by an acid acriflavine.

Twenty patients were selected for treatment from the out-patient departments of the Minneapolis General and the University Hospitals. All were unquestionable cases of psoriasis of the subacute or chronic type. Most of the patients had already been under our observation for some time, and all had received other therapeutic measures in the past. The series included twelve males and eight females between the ages of eighteen and fifty-seven years.

A preliminary series of seven patients received intravenous injections of the first preparation, the neutral salt. In each case the administration was followed by a reaction, the mildest of which consisted of marked flushing, with a sensation of heat in the skin and considerable nausea. In other patients there was severe nausea with emesis. Three individuals who were able to continue treatment showed no improvement after the fourth injection and the treatments were discontinued. The acid acriflavine was supplied several months later. This new preparation, given to three patients of the first series, was found to produce no ill effects. The number of patients was then increased to twenty. It was found that the use of a concentrated solution occasionally caused venous thrombosis. In two instances there was nausea when the solution was injected too rapidly.

The acriflavine was supplied in ampules of 0.1 gram each. The contents of one ampule were dissolved in 20 c.c. of sterile distilled water and injected slowly. With this method 0.1 gram doses of the drug were given three times weekly and were well borne in every instance. Early in the series no ultraviolet therapy was used in conjunction with the treatment. Later, in cases which did not respond and in those in which improvement had come to a standstill, injections were followed by suberythema exposures to the alpine lamp. In all cases throughout the treatment an ointment containing three per cent salicylic acid and six per cent sulphur in vaseline was applied to the lesions daily.

While several cases showed little or no improvement, the majority were benefited and in four the results were striking. Case 2 had for years been incapacitated from work because of the severe involvement of his hands and finger nails. He had been under our observation for two years, the condition having been intractable to other types of therapy. Although the last vestiges of the eruption did not entirely disappear, he improved rapidly and was soon able to resume manual work. Cases 4 and 14, both women, gave a similar history of resistance to other forms of treatment. Their eruptions disappeared entirely by the ninth and tenth injection respectively and at the present time, after an interval of three months, there has been no recurrence.

It was noted that the nummular type of lesion responded best to this form of therapy. In our series the results in the females were better than in the males, the best response being seen in the females with the nummular type of psoriasis.

Involution of the psoriatic lesions under treatment followed a definite course. There was a gradual flattening of the papules and a diminution of the scales leaving a pigmented area in the patch formerly involved. This pigmentation faded slowly and was the last evidence of the eruption to disappear. A majority of the cases

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## CASES TREATED

Case	Age	Sex	Type	Location	Duration	Injections	Lamp	Results
1	31	F	Circinate and Guttate	Profuse eruption, trunk and extremities	12 yrs	8	None	No improvement, refused further treatments.
2	42	M	Diffuse and Nummular	Very profuse generalized eruption	24 yrs	24	After 15th Injection	Excellent. Eruption disappeared with exception of isolated papules.
3	57	M	Diffuse and Nummular	Trunk and extremities	10 yrs	15	After 10th Injection	Moderate improvement. Many lesions still present, although greatly faded.
4	38	F	Nummular	Elbows and knees	4 yrs	9	None	Eruption entirely disappeared in three weeks.
5	35	M	Nummular	Profuse, trunk and extremities	18 yrs	20	After 15th Injection	Much improved. Pigmented areas remaining with isolated papules.
6	40	M	Diffuse	Trunk and extremities	2 yrs	24	After 20th Injection	Much improved. Only few small areas remaining.
7	55	F	Nummular	Extremities	7 yrs	14	None	Eruption entirely cleared. Slight recurrence 6 weeks later.
8	20	M	Nummular and Guttate	Hands, arms and genitalia	3 yrs	24	After 6th Injection	No improvement. Exacerbation three weeks after discontinuing treatments.
9	22	M	Guttate and Diffuse	Extremities	2 yrs	18	None	Slight improvement.
10	43	M	Guttate and Nummular	Trunk and extremities	10 yrs	12	None	Marked improvement. Pigmentation with few isolated punctate lesions remaining.
11	31	M	Nummular	Profuse eruption of trunk and extremities and scalp	12 yrs	24	After 18th Injection	Very little improvement. Slight fading of existing lesions.
12	35	M	Nummular and Diffuse	Very profuse eruption, face trunk and hands	20 yrs	24	After 18th Injection	No improvement.
13	18	M	Guttate and Diffuse	Trunk and extremities	5 yrs	15	None	Moderate improvement. Many lesions disappeared. Those remaining greatly faded.
14	46	F	Nummular	Trunk and extremities	9 yrs	10	None	Entirely free from eruption.
15	38	M	Guttate and Diffuse	Profuse eruption, scalp, trunk and extremities	4 yrs	18	None	Moderate improvement. Many lesions disappeared; others unchanged.
16	35	M	Nummular and Diffuse	Scalp and extremities	3 yrs	18	After 15th Injection	No improvement.
17	42	F	Nummular and Guttate	Extremities	17 yrs	15	None	Many lesions disappeared. Others faded.
18	21	F	Guttate and Diffuse	Profuse eruption, scalp, face, trunk, and extremities	6 yrs	18	After 12th Injection	Very little improvement. Itching, which had been marked, relieved with first injection.
19	32	F	Guttate	Profuse eruption, face, trunk and extremities	2 yrs	12	None	Moderate improvement.
20	37	F	Guttate and Diffuse.	Profuse eruption, trunk and extremities	16 yrs	15	None	Marked improvement, although numerous lesions remained.



Fig. 1. Case Number 14 at the beginning of treatment.



Fig. 2. After six treatments. Note residual pigmentation with isolated papules.



Fig. 3. After nine treatments.



Fig. 4. One month after the last injection. Ten injections were given.



showed improvement without complete disappearance of the lesions. In these, improvement continued for a variable time and then remained stationary, leaving at the site of the psoriasis patch a pigmented area containing a few isolated, scaly papules.

In none of the cases in which the eruption disappeared entirely was violet ray used. It was further noted that lesions on the protected areas of the body showed involution as rapidly as those of the hands and arms, which were more exposed to actinic rays. Throughout the series the patients who showed improvement did so without the rays, although the addition of actinic therapy undoubtedly enhanced the value of the treatment. In three cases which showed no improvement with injections, the addition of radiation produced no beneficial results.

Obviously, then, improvement in these cases was not due entirely to the photosensitizing action of the drug. The antiseptic action of this and related dyes has long been known and successfully utilized in the treatment of other conditions. Whether it is this or some other property of the drug which is responsible for the

therapeutic results is a matter for speculation.

While our results as a whole were pleasing, we do not wish to create the impression that we consider this drug as a "cure-all" for psoriasis or a specific in any sense. Equally good or better results have been reported with various preparations. It has long been known of this resistant disease that some cases will respond to one type of treatment while others require quite a different form of therapy. We recommend intravenous use of acriflavine, therefore, only as a practicable addition to the medicinal armamentarium in the treatment of psoriasis.

#### SUMMARY

1. Twenty cases of psoriasis vulgaris treated with intravenous injections of acriflavine are reported.
2. All but three cases of the series showed clinical improvement and in four cases the results were striking.
3. The therapeutic results cannot be entirely attributed to photosensitization.
4. Intravenous administration of acriflavine is of practical value in the therapeutics of psoriasis.

#### THE TESTIMONIAL INDUSTRY

Two or three years ago certain members of the medical profession were asked to answer a question that they were wholly incompetent to answer. The question was whether, in their judgment, the "toasting" process alleged to be applied to the tobacco in "Lucky Strike Cigarettes" was likely to free the cigarettes from irritation to the throat. In addition to the questionnaire, the doctors received a carton of 100 cigarettes. The Lucky Strike people now claim that over 18,000 physicians answered the question given in the affirmative. Today physicians in the south and possibly other sections of the country are being circularized by the concern which exploits "Ironized Yeast." "Ironized

Yeast" belongs to the get-plump-quick class of nostrums. It is a mixture of yeast and iron. It also contains phenolphthalein. The circular letter that the Ironized Yeast Company is ending out to physicians starts out with this rather crude offer: "A GIFT WORTH \$10 FOR YOU FOR JUST A LITTLE INFORMATION." The physicians are then asked to answer two questions, the answers evidently to be used in the exploitation of Ironized Yeast. For the answers written on his own stationery, the physician is offered "a luxurious flacon of exquisite French perfume—TOUT PARIS DE GUIMET regularly sold at \$10." Will the medical profession bite? (Jour. A. M. A., August 30, 1930, p. 679.)

## EXTRA-UTERINE PREGNANCY: ANTECEDENT AND SUBSEQUENT HISTORIES IN 471 CASES\*

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THE possibility of extra-uterine pregnancy must often be considered in the examination of women as a routine during the child-bearing period. Some such patients never have the alarming symptoms listed in textbooks, and they recover spontaneously if complete tubal abortion occurs during the early weeks of pregnancy. The ovum dies, the bleeding stops soon after the tube is emptied, and the resulting hematocele and fetal structures are absorbed, leaving little, if any, pathologic evidence. The same result occasionally follows rupture of a tube between the folds of the broad ligaments, with production of an intraligamentous hematoma and death of the ovum. Such patients experience severe pelvic pain, marked local tenderness, definite tumor on the side of the rupture, and more or less shock. However, if bleeding stops, the patients recover. Every lithopedion represents an ectopic pregnancy that has progressed past the fourth month and in which the fetus has died. In such cases, however, the condition has not been recognized until at operation months or years afterward. Masson and Simon in 1928 reported nine cases in which lithopedions were observed at The Mayo Clinic in a study of 445 cases of extra-uterine pregnancy.

Statistics on the incidence of tubal pregnancy vary a great deal. From some clinics, an incidence as high as one in 150 normal uterine pregnancies is reported, whereas from others the ratio is reported as one extra-uterine pregnancy to more than 300 normal pregnancies.

Fecundation probably occurs normally in the outer part of a fallopian tube, and the fertilized ovum is propelled by the musculature of the tube and the ciliated epithelium into the uterine cavity, where, under normal conditions, it becomes attached and develops during the following forty weeks. If for any reason the passage of the ovum along the tube is interrupted, and it becomes embedded in the tubal mucosa and commences to develop, extra-uterine pregnancy results. It is Kline's belief that more or less de-

cidual reaction occurs at the site of implantation. Williams believes that the main purpose of the decidua is to protect the maternal tissue against invasion by the trophoblastic cells. Hemorrhage depends on the inability of the relatively scant decidua in the cases of tubal pregnancy to prevent invasion of the musculature and blood vessels.

Polak mentioned three types of ectopic pregnancy: (1) that in the free end of the fallopian tube (76 per cent); (2) that in the isthmic portion of the tube (21 per cent), and (3) that in the intramural or interstitial part of the tube (3 per cent). The possibility of the occurrence of ovarian pregnancy must be admitted, since cases have been reported. One case of abdominal pregnancy, with placental attachment to the under surface of the liver and the transverse colon, was referred to by Williamson. I believe, however, that it may be inferred safely that all cases of extra-uterine pregnancy are primarily tubal, and that the placental attachment elsewhere is secondary.

The etiologic factors predisposing to the production of tubal pregnancy are: (1) previous inflammatory condition in the tubes; (2) previous inflammatory condition in other pelvic or abdominal organs; (3) previous operations; (4) congenital anomalies affecting the tubes, such as points of stenosis and diverticula, and (5) kinking or partial obstruction of the tubes as the result of malposition of the uterus or as the result of pelvic tumors. Moreover, the possibility of tests for sterility predisposing to the condition has been suggested by some authors.

The early diagnosis of tubal pregnancy is always difficult. As has been stated, in cases in which early death of the ovum occurs the symptoms are mild and of such short duration that a diagnosis is not made. On the other hand, the symptoms may be those of an acute abdominal lesion associated with extreme pain and tenderness in the pelvis, more marked on one side, or of severe internal hemorrhage, general shock, and slight or moderate vaginal bleeding. In most cases the history indicates a condition between

\*From the Division of Surgery, The Mayo Clinic, Rochester, Minn. Read before the Minnesota State Medical Association, Duluth, Minn., July 14 to 16, 1930.

these two extremes. The degree of pain is in direct proportion to the amount and rapidity of dilatation of the tube, or to the tearing apart of the fold of the broad ligament as the result of tubal rupture and of hemorrhage between the folds of the broad ligament. Weakness, dyspnea, fainting, shock, and collapse are dependent on the amount and rapidity of intra-abdominal hemorrhage. The amount and frequency of vaginal bleeding vary a great deal in different cases, but are never excessive. Kline stated that vaginal bleeding is not caused by separation of uterine decidua, and that in many cases such a structure does not develop. Curtis expressed the belief that decidua exists as long as the fetus is alive and it disappears after the fetus dies. Polak and Wolfe expressed the belief that vaginal bleeding continues as long as the ovum is alive and has any attachment to the tube. Such bleeding is from the uterus and not from the affected tube. Free uterine bleeding always means something other than tubal pregnancy; it generally means abortion. The association of intra-uterine and extra-uterine pregnancy, with symptoms of threatened abortion, should be suspected in such cases. Stein reported thirty-six cases observed since 1913. The temperature, as a rule, is only slightly elevated. The leukocyte count frequently changes; Farrar and Hendry believe it to be an index to the amount of free blood in the peritoneal cavity. The larger the amount of free blood, the higher the polymorphonuclear leukocyte count. The data obtained on bimanual pelvic examination naturally are dependent on the pathologic condition, and on the site of the abnormally situated products of conception. The possibility of the condition being bilateral must be considered. Johnson and Diasio reviewed ten cases from the literature published during the last seven years and added one of their own. The amount of bleeding that has occurred, and whether it has been between the folds of the broad ligaments or free into the pelvic cavity, naturally will affect the changes found. Also, whether the bleeding has been frequent in small amounts, with time for walling in, or whether it has been copious, and of recent occurrence, will modify the symptoms and signs. Insertion of a needle into the culdesac, or vaginal puncture, is often practiced by certain gynecologists, but the method is not without danger.

As a rule, there is nothing suggestive in the history of the case until after the first month of pregnancy. The patient may then be suspicious that she is pregnant. Later, on account of colic-like pelvic pain and irregular vaginal bleeding, she seeks medical advice. In many cases the early symptoms are much more alarming, the terrific pain and free intra-abdominal bleeding making emergency treatment advisable.

I believe that abdominal section, with removal of the affected tube and control of hemorrhage, is advisable in all cases as soon as the diagnosis is made, provided the patient is in a well-organized hospital where a satisfactory and safe anesthetic can be given and where a solution of gum acacia can be given intravenously, or a transfusion of whole blood, properly tested. The preferable method of anesthesia in critical cases is local anesthesia with ethylene by inhalation. I have never resorted to autotransfusion, but in the absence of gum acacia or a suitable donor, it would be advisable. There is no doubt that many patients who are in collapse immediately following severe hemorrhage will improve if treated expectantly, but there is no assurance that they will improve; many do not, and every minute of delay adds to the danger. Two patients in the series to be reported here were admitted in extremis and died of hemorrhage without operation. Vaginal section is advised in some cases of tubal pregnancy, but under modern technic I believe that abdominal section is to be preferred in all cases.

If the patient is in good condition, an operation is a relatively safe procedure and satisfactory results will be obtained in a high percentage of cases. On the other hand, if there has been excessive intra-abdominal bleeding, if there is superimposed infection, or if the ovum has survived the tubal abortion or tubal rupture and has advanced to the stage of abdominal pregnancy, the operation may be one of great risk. In cases of abdominal pregnancy, there will be decidedly less risk to the mother if the operation is delayed until well after the time of expected confinement and death of the fetus, since the blood supply will be much reduced and the fetal structures can be removed without risk of severe hemorrhage. If the patient can be cared for by an experienced surgeon in a well-equipped hospital, operation should be performed promptly in an

endeavor to save the child, even though many such children are crippled or deformed.

In a previous paper on extra-uterine pregnancy and subsequent pregnancies, results in 198 cases were reported. Eighty-seven (44 per cent) of the 198 patients became pregnant after having had an extra-uterine pregnancy. In all, the number of pregnancies subsequent to extra-uterine pregnancy was 162, and in 111 of these the pregnancies were normal. In thirty-four cases (20 per cent of the 162) the pregnancies were intra-uterine but terminated in miscarriages. Eighteen (less than 12 per cent of the 162 pregnancies) were extra-uterine. Therefore I believe that bilateral salpingectomy is not a justifiable operation for extra-uterine pregnancy if the opposite tube is apparently fairly normal.

From January 1, 1903, to December 31, 1928, 471 patients with 486 extra-uterine pregnancies were treated at The Mayo Clinic; 168 of these patients were reported on in 1914 by Mussey. The youngest patient was aged fifteen years, and the oldest was aged fifty-two years. The average age for the patients was thirty-one and seven-tenths years. In twenty cases the ovum was still developing in the tube when operation was performed. From the operative description, it was often impossible to determine whether tubal abortion or tubal rupture had occurred, but there were probably at least twice as many cases of tubal abortion as of the more serious complication of rupture.

There were seven cases of abdominal pregnancy, in three of which the pregnancy had reached full term. In one case an apparently normal child was delivered, but died suddenly about seventy-two hours later. In another case, a deformed child was delivered who died about two hours after birth. In the third case, the fetus, which was macerated and had reached full term, was dead and probably had been dead for about six weeks. It was possible to remove the placenta and greater part of the membranes in each case; the mothers all recovered uneventfully. In the other four cases of abdominal pregnancy the fetuses were alive and were between four and five months old. Lithopedions were found in ten cases. There were three cases of bilateral tubal pregnancy and one case in which a twin pregnancy existed in one tube. Cases of associated intra-uterine and ectopic pregnancy were not found.

The average length of married life for the group was eight and nine-tenths years. Previous sterility and previous abnormal pregnancy stressed by Allen are important etiologic factors. In this series, 109 (23.14 per cent) did not give a history of previous uterine pregnancy and fifty-three (11.25 per cent) gave a history of having had only miscarriages or ectopic pregnancies.

A history of previous pelvic disease was obtained in 221 (46.9 per cent) of the cases. The average length of time from the last menstrual period to the onset of symptoms was ten and sixty-two hundredths weeks. Pain was the chief complaint in 278 (62.32 per cent) of the cases. In 160 (36.03 per cent) vaginal bleeding was the chief complaint but it occurred in others as well; namely in 375 cases (79.61 per cent of the total number). The average blood pressure in millimeters of mercury was systolic 118.56, and diastolic 82.61. The average pulse rate was 90.5 beats each minute, the average temperature 98.84° F., the average hemoglobin 66.41 per cent, and the average leukocyte count 9,080 in each cubic millimeter of blood. There were six deaths following operation, an operative mortality of 1.27 per cent. Two other patients were admitted in extremis and died from hemorrhage without being operated on.

In two cases in this series, early tubal abortion was found accidentally at necropsy; one patient had died of acute nephritis, and the other of carcinoma of the esophagus.

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#### PHYSIOLOGICAL RESPONSE OF GUINEA PIGS TO ETHYLENE DICHLORIDE VAPOR

The United States Public Health Service, in coöperation with the Bureau of Mines, has conducted certain investigations relating to the effect of the several gases used in household refrigerators. Such investigations relating to ethylene dichloride vapor are of interest. The acute physiological response of guinea pigs exposed to air containing ethylene dichloride vapors was determined. The concentrations of vapor and periods of exposure ranged from those which produced death in a few minutes to those that caused no apparent effect after several hours. The symptoms, gross pathology, and fatality are given, together with a brief discussion of potential health hazards.

1. In the order of occurrence, the symptoms produced in guinea pigs by inhalation of ethylene dichloride vapor are eye and nose irritation, vertigo, static and motor ataxia, retching movements, semi-consciousness and unconsciousness accompanied by uncoördinated movements of the extremities, and death if exposure is continued. Exposure to 6 per cent vapors causes all these symptoms, excepting death, to occur in less than 10 minutes, and death in about 30 minutes. Exposure to 1 per cent causes all the symptoms to appear in 25 minutes with the possibility of death occurring a day or more following an exposure of about 15 to 20 minutes. Exposure to 0.12 per cent did not cause apparent symptoms or death following an exposure of eight hours.

2. The gross pathological findings were hyperemia, congestion and edema of the lungs with secondary degenerative changes in the kidneys. The severity of the pathology increased with the concentration of vapor and duration of exposure. The lung lesion was the most prominent and probably the greatest causative factor in death. No serious pathology was found for the following concentrations of vapor and periods of exposure: 6 per cent for 5 minutes, 1.7 per cent for 10 minutes, 0.4 per cent for 30 minutes, 0.2 per cent for 120 minutes, and 0.11 per cent for 480 minutes. Also these concentrations and exposures did not cause the death of the animals.

3. The summarized physiological response given in the four degrees usually reported are: 10 to 20 per cent kills in a few minutes; 0.4 to 0.6 per cent, dangerous in 30 to 60 minutes; 0.35 per cent maximum amount for 60 minutes without serious disturbances; 0.1 per cent, slight symptoms after several hours or maximum amount without serious disturbances.

4. A comparison of the results obtained with those reported in the literature for other compounds indicates that for single exposures and periods of an hour or more the toxicity of ethylene dichloride appears to be of about the same order as gasoline, benzene, carbon tetrachloride, and chloroform. For periods of less than an hour it is less toxic than these compounds.

5. The odor of ethylene dichloride is distinct and noticeable, and warning symptoms are produced by relatively safe concentrations.

## SURGERY OF THE INFANT ABDOMEN

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IN common usage the term infancy possesses a vague significance, and for the sake of accuracy it will be well to state the basis upon which the following discussion rests.

The newborn enters first into a neonatal period which extends over two or three weeks. This is the time of greatest change and adjustment, in physiology as well as anatomy, and one in which growth and function are almost constantly being brought into new relationships. Immediately following this and extending to the thirteenth or fourteenth month, when the erect posture is assumed, is the period of infancy proper; the period of life that I propose to consider at this time.

The medical treatment of diseases of infancy is upon a sound and rational basis and the pediatrician has assumed his proper position in the field of medicine. Surgery unfortunately has only given reluctant consideration to any modification of its status and in the main treats the child in terms of the fully developed individual.

Surgery of the infant abdomen is quite as distinct a field as is the medical treatment of infant diseases. It is true that the fundamental pathologic conditions are the same at any age; yet the clinical material wherein they are manifested differs greatly. Hence the application of any curative or palliative measures must be made to conform to this variation. Anatomically the newborn is different from the adult, not alone in size but in proportion, and, what is not generally appreciated, this proportion is an ever-changing one. Casual observation notes that the individual's increase in size is not uniform and that he passes through periods of alternative activity and passivity. But this by no means implies that the various body constituents increase uniformly and synchronously, for they do not: they increase with wave-like increment, subject to their physiologic need.

The skeleton of the body, being subject to its functional demands, as a whole increases its measurements in a curve very like that of Figure 1.

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The bony framework which supports the abdomen of the infant furnishes a basis for the many variations from the adult, as may be seen in Figure 2.

The cervical, thoracic and lumbar segments of the infant vertebral column occupy respectively one-fourth, one-half and one-fourth of its total length, while in the adult, growth has rearranged the limits to one-sixth for the cervical, one-half for the thoracic and one-third for the lumbar.

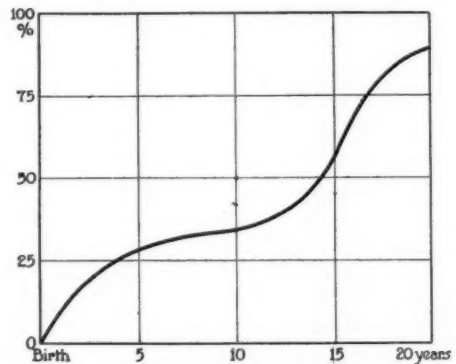


Fig. 1. General growth curve.

Thus it will be seen that in the newborn the longitudinal measurement of the abdomen is relatively much shorter than in the adult. This is made more effective by the absence of the lumbar curve, which appears with the assumption of the erect posture.

The pelvis itself tends to further constrict the abdominal content, as in the infant it is not only more vertical but much shallower and relatively narrower than in the adult. As a result, the abdominal viscera of the newborn must conform to a relatively short axis and a rigid shallow inferior limit.

The upper limit, a more expansile structure made up of the diaphragm and lower rib margin, partially compensates for the constriction by a circumferential increase giving rise to the outward flare of the lower thorax. This, however, is not entirely adequate and the excess bulk of the viscera bulges forward, the abdominal parie-

tes giving to the infant the aldermanic proportion which he will only regain in later life.

An examination of the abdominal walls themselves yields definite yet less striking differences

contact with the spleen. As may be seen in Figure 3 it is relatively much larger than in the adult. The ligamentum teres, so recently a channel for the umbilical blood, is also large, and

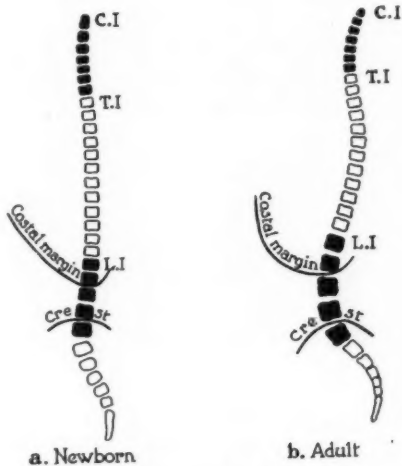


Fig. 2. A comparison of *A* and *B* shows the relatively short lumbar spine in infancy.

than may be found elsewhere. The skin and subcutaneous fat are largely dependent upon the nutritional state and consequently are variable factors. The same is in a measure true of the musculature, which is differentiated to the same degree as in the adult, although proportionately thinner. The fascial development, while nearly proportional to the muscular development, is nevertheless markedly deficient. The aponeuroses of the oblique muscles are thin and delicate and are relatively much less in extent than in the adult. Likewise the anterior and posterior sheaths of the recti are of such fine texture that their constituent fibers can be readily separated. But quite the contrary is true of the peritoneum, which in the newborn is nearly as thick and as strong as in the adult, and on the whole this is perhaps the most noteworthy feature in the parietal structure.

The abdominal viscera at birth present an epitome of fetal life, each an index of its former importance and in total disregard of its future function.

In accordance with this scheme, the liver occupies the greatest space. In fact, in the newborn it occupies two-fifths of the abdominal cavity. As a result it is forced far below the costal margin and a considerable distance to the left, in

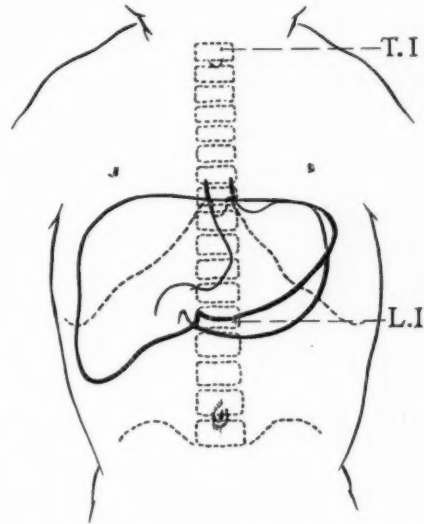


Fig. 3. The skeletal and visceral relations in the infant abdomen.

forms a prominent broad attachment to the anterior abdominal wall.

The spleen in contradistinction to the liver has an apparent rather than real importance, and as regards size alone is more proportional to the adult. Its position in contact with the left lobe of the liver at birth brings it into greater prominence than it occupies in later life. As yet, its ligamentous attachments are only imperfectly vascularized and the vasa efferentia of the adult splenic ligaments are difficult to identify.

The stomach of the newborn is a vertical stomach, but for only a few days, when it becomes transverse, a position which is maintained until the erect posture is assumed. While at birth it is of a few cubic centimeters capacity this rapidly increases during infancy and at one month it has doubled and in a few months more quadrupled. This growth is downward and laterally, the greater curvature escaping under the liver margin and at the same time forcing the spleen to the left and posteriorly.

The levels of the cardia and pylorus are relatively the same in infants and adults, but are both relatively nearer the pelvic brim in the newborn.

The remaining portion of the gastro-intestinal

tract exhibits little of interest except for the cecum. The head of the cecum almost uniformly is found in the right iliac fossa and in the same relative position as in later life, although the relatively large liver and short lumbar segment lend color to the belief that its position changes with postnatal development.

The foregoing brief survey of the grosser visceral differences between infant and adult has been presented not alone to recall mere structural detail but to emphasize what the texts so often neglect, namely, that the newborn is a distinct anatomic entity.

That the infant is a distinct organism to the physiologist is equally true and the biochemical change is no less evident than the structural one. Much of this is inter-related and exhibited as biophysical phenomena. For example, the proportion of mass and surface area is such as to give the newborn a relatively larger area of radiation. This not only modifies the mechanism of heat production, but also its regulation. In close association with this is the fact that the infant has an average water content of 75 to 80 per cent, and requires for growth maintenance about 150 cubic centimeters per kilo per day, which is far in excess of adult needs. From Marriott's observations on the phenomena of anhydremia it is seen that the infant is peculiarly susceptible to disturbances of water balance. The work of Dragstedt and others would suggest that chloride loss may be of equal importance.

Dismissing thus briefly the normal, let us consider for the moment the pathologic processes. Again the infant is unique in that only rarely is the abdomen invaded by bacterial disease processes. The gallbladder and appendix, so commonly affected in later life, are remarkable in this immunity, and peritonitis, when it does occur, is almost invariably primary or due to surgical invasion. As a corollary to this it may be noted that when infection becomes established anywhere in the body of the infant, it more readily overwhelms the patient and bacteremias are more frequent in infancy than adult life; perhaps because of the yet undeveloped immunity. This is in keeping with Hermann's observations and would conform to his idea that peritonitis is an immunity phenomenon. The blood changes are a bit more difficult to evaluate than in the adult. The inversion of the polymorphonuclear and

lymphocyte counts and the rapid changes in total counts in the neonatal period tend to diminish the importance of leukocytosis as a diagnostic aid. Nevertheless, if the work of Bakwin-Morris and some others is to be accepted, a leukocyte count above 10,000 in infancy proper is to be considered pathological.

Unfortunately temperature and pulse changes are not so significant and only the very marked variations can be taken as evidence of definite disease processes.

To summarize the pathological considerations the surgery of infancy is for the most part the surgery of obstruction. Of these, hypertrophic pyloric stenosis and intussusception are by far the most common. It is true that there remains a certain number of patients who require operation because of congenital anomalies either developmental or in the form of new growths. These, however, require only special technical consideration and are subject to the same general underlying principles which govern the more common operative procedures.

Under ordinary circumstances the infant tolerates operation surprisingly well for short periods. It must be borne in mind, however, that mortality accrues not so much from the magnitude as the duration of the operation. In the adult it is often possible and permissible to be deliberate or even dilatory, but in the newborn there is not that stamina and tenacity to life which allows protracted surgical trauma.

It is obvious that in the early days of life the nutritional state of the patient is always the prime factor in determining his operability. Unfortunately it is not always possible to delay sufficiently to institute proper feeding methods and await a gain in strength and vitality and often we are confronted with a grave surgical condition complicated by starvation and dehydration. To avoid existing or impending dehydration phenomena the ingestion of rather large amounts of fluid under the skin, transfusion into the fontanelle and the intraperitoneal injection of blood or saline are of inestimable value.

It is not my purpose here to dwell upon the rationale of operation but to feature a few points which I believe further a happy termination.

Ether should be the universal choice for anesthesia chiefly because it permits the maximum of effort with a minimum of manipulation. Nothing is so fatal to success as prolonged handling of



already injured tissue. I can see no reason for the extensive mid-line incision so often employed; moreover, infants do not tolerate evisceration nor is the mid-line an advantageous situation for union. Recalling for the moment the topography of the protuberant infant abdomen, the logic of the right rectus incision is at once apparent.

The closure of wounds in adults is generally a matter of relatively little difficulty and may be accomplished by a variety of methods. Not so, however, in the infant. As noted before, the fascia is ill suited to any considerable strain and is surprisingly friable. Because of this and the relatively greater tension exerted (for the infant seems to be striving to break himself open) operative wounds in infants are prone to rupture. And as this is at times a cause of secondary obstruction necessitating reoperation, too much care cannot be employed.

Once off the operating table the patient is out of the surgeon's hands and again becomes a pedi-

atric liability, for it is only inviting disaster to attempt the dual rôle of surgeon and physician. The surgeon may achieve a brilliant operative success but it rests with the pediatrician to conserve it.

In conclusion, rather than attempt a summary of what has gone before, let me reiterate the surgical and anatomical disparity between infant and adult, the necessity for speed and proper medical coöperation. In short, here as elsewhere it behooves us to be accurate, thorough and to be brief.

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## PRESIDENT'S LETTER

**T**HE increase in knowledge during the last fifty years has opened an ever multiplying number of avenues from which additional knowledge may be gathered. A practical result is observed in the lengthening number of years young people are required to attend school to fit themselves for their various vocations in life. Especially is this noticeable in the professions and more particularly in the profession of medicine. This vast available knowledge with its practical application has led necessarily to the division of work into many fields. Thus specialism is born.

Medical schools, medical men, medical students and a large and intelligent block of the laity recognize the need of highly scientific men, technical men trained in the field of *research*; the need of thoroughly scientific men trained in the field of *clinical medicine*; and the need for a reduction in time taken to graduate well trained young clinicians, fit to cope with at least 85 per cent of the ills that are encountered in the everyday practice of medicine.

Much intelligent effort is being made to meet these needs. The first is an easy problem to solve; the two latter are more difficult. Johns Hopkins Medical School is an example of the ultra scientific type of school, leaning strongly to the technical training of its students. The University of Pennsylvania Medical School is an example of the type which stresses the teaching of clinical medicine. (Both of these institutions are maintained by private endowment or by the latter together with subscriptions. They are not state supported.)

The tendency in the former type of school is to build its faculty of purely technical men—whose whole time is devoted to the educational interests of the institution. The latter type of medical school endeavors to utilize the knowledge and experience of the practicing physician of recognized skill and teaching ability. His advice and wisdom are sought in formulating and directing the clinical course of study—the clinical curriculum. He is made a member of the faculty and as such enters into the councils of that body. He has something to offer in the training of medical students that the technically and institutionally trained educator does not possess, and therefore cannot give. His active participation in teaching the purely clinical subjects rounds out the purpose of the school. He should have a free hand in conducting the clinical courses and be held responsible for results.

Both of these types of medical education are valuable and both have a definite field of usefulness. Prospective medical students, and their parents, must of necessity be interested in knowing the type of the medical school best suited to meet their needs. Those interested in the study of medicine are often sorely perplexed in choosing a medical school. Too often the choice is determined by such considerations as the size of the institution, its distance from home, the expense, and perhaps other and minor matters. *Primarily the choice should rest upon the ultimate purpose of the student.* Does he wish to become a highly and technically trained medical scientist, tending strongly to and desiring to follow a life of research? Or, does he choose to become a thoroughly trained clinician, practicing medicine among the people, contributing to their relief from suffering and distress, entering intimately into their lives and understanding their problems and needs as only the true physician can, and becoming an active and integral part of the social life of the community in which he lives?

These considerations then should decide him in choosing the type of school in which he will matriculate as a medical student. It should be borne in mind, in making this decision, that but few men and women are by nature adapted to research work. The earnest student, while in his pre-medical course, with the aid and counsel of his instructors (providing these are observant, logical and not too narrow in their outlook), should be able to know his mental and intellectual tendencies pretty well by the time he is ready to enter upon his medical course. He should be able then to decide upon the type of medical school he will attend. The decision is of extreme importance for therefrom the whole course of after life takes direction.

S. H. Boyer

President,  
Minnesota State Medical Association.

# EDITORIAL

## MINNESOTA MEDICINE

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## SUPREME COURT OF MINNESOTA UP- HOLDS BASIC SCIENCE LAW

On October 10, 1930, the Supreme Court of this State declared the 1927 Basic Science Law constitutional in a splendid opinion written by the Hon. Andrew Holt, Associate Justice. The decision of the Court was unanimous. The rendering of this decision is of tremendous importance, not only to the people of the State of Minnesota, but to the medical profession as well. It is the first time in the history of the United States that the constitutionality of a Basic Science Law has been passed upon by a State Court of last resort. Again Minnesota pioneers in the field of legisla-

tion designed to more adequately protect the public health, to raise the standards of the medical profession, to eliminate quackery and to make it possible to more effectively dispose of the quacks who for years have been preying upon the sick.

The Minnesota Basic Science Law was enacted on April 12, 1927. It was passed in the Senate by a vote of sixty-one to two. It was then passed in the House by a vote of one hundred eleven to seven. Thereafter it was re-passed in the Senate by a vote of forty-four to one. The overwhelming vote in favor of the law clearly indicates the wonderful work done by the Minnesota State Medical Association and the Legislative Committee headed by the very able Dr. H. M. Johnson of Dawson. The vote also indicates the broad minded and receptive attitude on the part of the Legislature to enact a law that was extensive in its scope and one that had provisions in it for the enforcement of the law after its enactment. The law is a tribute to the intelligence of the Legislature and we feel that credit should be given where credit is due, particularly in these days of unrest and criticism.

Following the enactment of the Basic Science Law the State Board of Medical Examiners set in motion the machinery provided in the law for its enforcement. The annual registration fee paid in January of each year by every physician and surgeon registered in this state was made available for the enforcement of the various provisions of the law. This money is in the custody of the State Treasury and is expended by the Board as the law requires. The Medical Board has been engaged in a vigorous campaign of prosecuting those who have been practicing healing in the state without lawful right. The Board is also making every effort to make Minnesota as uninviting as possible for quacks in other states. We are certain that the Board has the united support of every member of the medical profession in their efforts. It was this work on the part of the Medical Board in connection with a recent case that precipitated the present decision in the Supreme Court.

The opinion written by Justice Holt clearly indicates that very careful consideration was given

the law and it is interesting to note some of the matters contained in the opinion. Before this is done it might be well to consider some of the objections raised against the law. The first serious objection raised against the law was that the Legislature had no right to authorize the issuance of Basic Science certificates to those lawfully engaged in the practice of healing at the time of the passage of the law. To this the Court said:

"The law is neither arbitrary nor unreasonable in the respect of treating those already licensed as compared with those to be licensed after May 1, 1927."

The Court further said:

"No one can legitimately object to laws raising the standard of knowledge which might aid in the treatment of human ills by those engaged in that calling."

Another contention against the law was that it was unreasonable and arbitrary for the Legislature to classify those engaged in the practice of healing. That is, to make special provision for dentists, nurses, midwives, masseurs and the like. To this contention the Court said:

"Each occupation comes in contact with the human body and may affect its well-being, but none of them relates to what is generally understood as taking charge of persons affected with disease or bodily injury to effect a cure, if we except dentists."

The Court further said:

"With the wisdom of legislative classification, courts are not concerned. In laws of this sort all evils cannot be reached at once, nor every desirable object gained in one legislative session."

We wish to emphasize the significance of the last quotation. It is not possible in this day and age to secure the enactment of every desirable law at one session of the Legislature. Conditions change; new methods of quackery are devised; new cults are formed and laws must necessarily be enacted from time to time to meet these conditions. The Court clearly emphasizes the right of the Legislature to recognize degrees of harm and to proceed step by step and to enact laws that presumably hit the evil where it is most felt.

#### POLIOMYELITIS IN MINNESOTA

The present epidemic of anterior poliomyelitis began in Nobles County in April and was confined almost wholly to the southwestern part of the state until the latter part of the summer. In August, cases were reported from fourteen additional counties for the most part in the south-

eastern part of the state. During September the epidemic had further spread, cases being reported in twelve additional counties, and in October, twelve more counties were invaded. The State Health Department gives the following cases reported each month: April—1, May—3, June—16, July—59, August—80, September—100, October (to the 29th)—76. The peak of the curve showing incidence of the disease was reached the first week in August. Instead of the rapid incline usually experienced, this year second and third peaks recurred the first and last weeks in September which were nearly as high as the one in August.

Epidemics have been reported in Illinois, California, and southeastern Wisconsin, and figures show a rather general epidemic throughout the country.

Our worst state epidemic was in 1909 and 1910 when 234 and 201 deaths respectively were reported. In 1916 another epidemic occurred in which there were 912 cases reported with 105 deaths; again in 1921, 705 cases and 102 deaths; and the last epidemic in 1925 with 941 cases reported and 145 deaths. Doubtless the reported cases make up a comparatively small portion of the total cases existing in any epidemic. It is no unusual experience to discover other members of the victim's family ill with fever, headache, sore throat, nausea or vomiting, and perhaps a little neck rigidity and no paralysis, or maybe only a slight paresis or merely an exaggerated reflex which could be readily overlooked. Some have estimated that only about 20 per cent of cases are diagnosed.

This frightful disease which hits like a stroke of lightning here and there and carries a mortality of 11 to 15 per cent, and, what is perhaps worse, leaves its victims oftentimes with extensive paralysis, must however be classed as an infectious disease. The most logical assumption is that a large majority of adults are immune and a certain percentage carriers of the infection. The usual seasonal occurrence of epidemics, the height of the epidemic occurring in August, is difficult to explain. Males predominate among those stricken and the disease occurs more frequently in the first five years of life than in any other five-year period. The mortality rate, however, usually increases with maturity.

The symptoms above mentioned, in the presence of an epidemic should arouse suspicion on



the part of parents and physicians. A frank paralysis leaves no room for doubt. A rigidity of the neck and an increased cell count in the spinal fluid in the presence of an epidemic is sufficient to warrant a diagnosis, isolation, and whatever treatment is possible. There seems to be enough evidence of the value of convalescent serum to warrant its trial. A certain amount of convalescent serum has been available at the University Medical School since September 27. This is obtained by allowing the blood from a convalescent to clot, filtering the serum, and adding a preservative. Twenty c.c. given intramuscularly as soon as a diagnosis is possible, is recommended. The delay to physicians throughout the state incident to sending to the University is costly for the patient. More practical would be the administration of approximately 40 c.c. of blood from a convalescent even though a period of years had intervened since the infection of the donor. Recent experimental work\* on this poliomyeliticidal action of normal human serum *in vitro* and the occasional favorable result,† in poliomyelitis with the use of serum from normal non-convalescent adults suggests a practical method worthy of trial.

The use of convalescent serums for wholesale immunization is out of the question.

Physicians should be on the alert to diagnose this disease as early as possible in order at least to establish isolations and quarantine. Although serum treatment cannot be said to have been firmly established, every effort should be made to give it a fair trial.

### FOOD FADDISTS

Statisticians have enjoyed the memorable distinction of the superlative in prevarication—"liars, d—liars, and statisticians." In grades of dumbness in like ascent the banner for excellence goes to food faddists. Unfortunately the management of a most worthy milk products firm will not read these lines. Few physicians will hesitate to lend full support.

A recent comment in a magazine states that no

one should presume to write an editorial unless he feels and thinks deeply upon the subject treated. Well here goes.\* I believe in food—three times a day. I agree with a somewhat obese confrère who says, "Eating is one of our greatest indoor sports." It is possible to even go further: The good old summer time picnic with its ozone, scenery and clutter of indigestibles is far from an affliction, and invites God-given rest to an overwrought brain even though it may clog up a burdened liver.

Need I describe the paid minion assaulting a series of luncheon club groups and culinary assemblies, not to mention our schools, with the absurd statement that everything we are depends upon the food we eat? "Tell me what a man eats for breakfast and I can tell you the reaction he has throughout his day," thunders this oyster. "Look to the cause, gentlemen—if you ever expect to empty our asylums and almshouses, overcome our appalling illiteracy and helpless inefficiency, then learn first to choose your own food and that of your children!"

It is almost a calamity that vitamins have been scientifically exploited, the pseudo-scientific food vender has taken such horrible liberties with them. Man, with his magnificent adaptability to food, can live in almost any part of our known world. Look at the infinite variety in his diet adapted as it must be both to his needs and circumstances. And do not forget how gloriously the much cursed human economy adapts itself to definite poisons, albeit some of these are presently mollified by "toasting" and ultraviolet exposure! Aside from early life it is fair to state that any adults will have a strenuous task evading all needful vitamins in any half reasonable diet. Appetite and food enjoyment—one of our greatest boons in a neurasthenic age—must not be harassed by a flood of senseless taboos and "don'ts." Gourmands and human hippopotami deserve no commendation, but even at that they only hasten to Elysian fields. There they will not be annoyed by the presence of vitamin cranks huckstering cottage cheese and yeast.

E. L. T.

\*Shaughnessy, H. J., Harman, P. H., and Gordon, F. B.: Neutralization of the virus of poliomyelitis by human sera. *Proc. Soc. Exper. Biol. and Med.* 27:742 (May) 1930.

†Zingher, Abraham: The diagnosis and serum treatment of anterior poliomyelitis. *Jour. Am. Med. Assn.* 68:817 (March 17), 1917.

\*Written after listening to a professional (Doctor) dairy products exhorter address a luncheon club.

## CONSULTATION BUREAU

WM. A. O'BRIEN, M.D., *Director*

Minnesota State Medical Association

11 West Summit Avenue

Saint Paul, Minnesota

1. *Question.*—I have under my care a case which I have diagnosed as complete heart block. The history and cardiac examination are as follows:

Man, married, age 40, farmer by occupation, has always done extremely hard manual labor. Admitted to the hospital with complaint of fainting spells and dizziness. The immediate condition lasted for about 24 hours and grew worse. He stated that he had had these spells in very mild form for the past year and a half to two years. About three days before admission to the hospital he became slightly overheated. He believes that this is the beginning of his condition. Past history was negative.

Pulse rate on admission was 22 per minute. Adrenalin, 10 minims, was given by hypo with marked relief. The cardiac examination showed the pulse rate to be 22, apex beat of the ventricle the same, and that of the auricle about 80 to 85 per minute. The picture showed that of complete heart block, and the patient was given ephedrine, grains  $\frac{3}{4}$ , three or four times a day. This controlled the fainting spells, and the patient was fairly comfortable. Two days following this, continuing with ephedrine, barium chloride, grain  $\frac{1}{2}$ , was given three times a day. The patient was kept in the hospital three weeks, pulse rate at no time going above 34. Beat was regular in both the auricle and ventricle. The patient improved generally, however, and was able to be up and around without any dyspnea. Atropine in full doses had no effect. The Wassermann was negative. Blood and urine examinations were normal. No foci of infection were found.

At the present time patient is able to do very light exercise with no discomfort, and his condition remains the same as at the time of discharge from the hospital. I would like to get your opinion as to whether or not anything further can be done for this man and as to the prognosis in the case.

*Answer.*—The following suggestions were received in regard to this case:

(1) From the history and findings there can be no question as to the correct diagnosis in this case, that of complete heart block. The question would be as to the etiology. With syphilis ruled out, it is very likely that coronary disease is at the basis. Because of this it might be well to give the patient metaphyllin, 1/10 gram, dissolved in water four or five times a day. In regard to the specific treatment, I cannot suggest anything further than that already instituted, ephedrine,  $\frac{3}{4}$  grain, and barium chloride, grain  $\frac{1}{2}$ . Digitalis is indicated when there is any evidence of decompensation. Apparently this is not present now. Patient is to do only light work, of course. The prognosis is not very good, although I have had cases live quite comfortably for periods of ten years before decompensation set in. I think that the doctor in charge of this case is to be congratulated on his diagnosis and the management of the case.

(2) In the treatment of complete heart block in the presence of Stokes-Adams' phenomenon, we have had our best results in the administra-

tion of desiccated thyroid extract. We have very distinct evidence that the cerebral phenomena are not wholly the result of temporary ventricular asystole but may also result from under-ventricular filling and consequent insufficient ventricular outflow. It has been on this basis that thyroid extract has been given, and we have had numerous instances where the manifestations have been entirely controlled, and if not entirely controlled definitely modified. The drug should be given only after the determination of basal metabolic rates with checked readings, and an attempt, of course, should then be made not to produce a therapeutic hyperthyroidism. As a rule, one to two grains daily given in one dose, is sufficient provided the dosage has been accurately standardized and the case observed by occasional basal metabolic rate determinations. The drug may be continued over a rather indefinite period of time. It has no effect whatsoever on the auriculo-ventricular dissociation but it is merely an agent that by increasing the rate of combustion effects some increase in circulation rate. Barium chloride has been used with rather indifferent results, and its action depends upon increasing the irritability of the ventricle, frequently resulting in premature contractions, thereby sometimes increasing ventricular rate.

The general prognosis of complete heart block where the Stokes-Adams' phenomena have occurred is unfavorable. In our series the average expectation of life was about twelve months. Without the Stokes-Adams' phenomena the outlook is considerably more optimistic. The prognosis, however, is chiefly dependent upon the degree of heart muscle capacity, depending to a large extent upon whether or not the fundamental cardiac disease is rapidly progressive or not, and to an appreciable degree on the instituted regime.

(3) It is a clear-cut case of complete heart block which has been very well handled therapeutically. Apparently the Wassermann was negative; but in a case forty years old, I would recommend that the Wassermann be repeated at two different laboratories, making use of both the Kolmer technic and the Kahn technic. Complete heart block due to syphilitic gummatous infiltration, it is true, is fairly rare, but does occur, and in all cases forty years or under I think we should look for it very carefully, because, if it is due to syphilis, treatment directed against syphilis will very frequently clear up the heart block if not administered too late.

2. *Question.*—I have a youngster a week old who has bilateral congenital club feet. I wish you would advise me as to when treatment should be started and of what nature it should be.

*Answer.*—Correction of congenital club feet should be started in the first few weeks of life. Any simple appliance which will bring the feet in line should be used. A light plaster cast or a cardboard splint can be applied. In any event, the progress of the case should be followed very carefully so that frequent adjustment can be made. In this way it is possible to correct congenital club feet without an operation in most instances.

## OF GENERAL INTEREST

Dr. Leon J. Tiber has moved from Saint Paul to Los Angeles, California.

Dr. Joseph Halpin is house physician at the Gillette State Hospital, Saint Paul, this year.

Dr. W. A. O'Brien now gives his health talk over WCCO each Wednesday morning at 11:15.

Dr. F. W. Schacht has left the Mayo Clinic and will practice in Winnetka, Illinois, limiting his practice to urology.

Dr. J. H. White, formerly associated with the Mayo Clinic, will continue practice with the Southwest Clinic, Phoenix, Arizona.

Dr. Charles N. Hensel, St. Paul, is recovering from a fractured leg received September 14 when he was thrown from a horse.

Dr. W. A. Coventry has just returned from a meeting of the American Obstetricians and Gynecologists in Buffalo, New York.

Dr. J. R. Hand, formerly associated with The Mayo Clinic, Rochester, has established offices in the Mayer Building, Portland, Oregon.

Dr. G. D. Guilbert, formerly of Waterville, Minnesota, is Associate Medical Officer at the U. S. Veterans' Hospital at Tucson, Arizona.

Dr. M. G. Gillespie attended the meeting of the American College of Surgeons in Philadelphia in October and was inducted into the College.

Dr. Emanuel Barnett is in private practice at Sanborn, Minnesota. Dr. Barnett was an interne at St. Joseph's Hospital, Saint Paul, the past year.

Dr. Donald De Coursey, who finished his interne work at St. Joseph's Hospital this year, is on the rotating service at the Veterans' Hospital, Minneapolis.

Dr. John A. Haugen is with the Detroit Receiving Hospital, Detroit, Michigan, where he is completing an internship begun at the Abbott Hospital, Minneapolis.

Dr. Joseph Ryan has become a member of the staff of the Saint Paul Clinic. Dr. Ryan completed an internship at St. Joseph's Hospital, Saint Paul, this year.

Dr. John Meade is taking a three-year course in internal medicine at The Mayo Clinic, Rochester, following the completion of interne work at St. Joseph's Hospital, Saint Paul.

Dr. R. E. Hultkrans, secretary of the Chisago-Pine County Medical Society, has left Rush City, Minnesota, and is now associated in practice with Dr. George Dunn, Minneapolis.

Dr. William F. Schoffman is following his internship at the Abbott Hospital, Minneapolis, with a fellowship in pediatrics under Dr. Frederic Schlutz at the Bobs-Roberts Hospital in Chicago.

Dr. Lloyd H. Ziegler resigned from the staff of the Mayo Clinic, Rochester, Minnesota, August 1, 1930, to accept the professorship of neurology and psychiatry of the Albany Medical College and to be neuro-psychiatrist-in-chief of the Albany Hospital, Albany, New York.

After completing a fellowship in Internal Medicine at the University of Minnesota, Dr. M. J. Shapiro studied at various clinics in Europe and has now returned and is limiting his practice to Internal Medicine with offices at 620 Medical Arts Building, Minneapolis.

The New York Academy of Medicine announces a series of Friday afternoon lectures of special interest to the practitioner, beginning Friday, November 7, 1930, at 4:30 P. M., at the Academy headquarters, Fifth Avenue and 103rd Street. Invitation has been extended to the profession generally.

Dr. James E. Perkins, St. Paul, has been awarded a Rockefeller Foundation Scholarship for a year's study at Johns Hopkins. Since June he has been an assistant in the Minnesota Department of Health and has obtained a year's leave of absence to enable him to pursue his post-graduate study.

Dr. Charles Remy has been selected to succeed Dr. List as superintendent of the Minneapolis General Hospital. After several years in general practice Dr. Remy obtained considerable experience in hospital administration during the World War, having been at the head of a 2,000-bed army hospital in France. After the war he was superintendent of the Yankton State Hospital for the Insane, at Yankton, South Dakota, and before coming to Minneapolis was assistant superintendent of the Michael Reese Hospital, Chicago.

## DR. LIST HONORED

On Monday evening, September 29, 1930, a testimonial banquet and reception was given to Dr. and Mrs. Walter E. List at the Hotel Nicollet, Minneapolis, in recognition of the conspicuous service Dr. List has rendered to the city in the upbuilding of The Minneapolis General Hospital.

Some two hundred guests gathered in the Grand Ballroom. The Honorable William F. Kunze, mayor of Minneapolis, presided. The principal address of the evening, entitled "A Minister of Healing," was given by the Reverend Dr. Roy L. Smith. Brief speeches were made by L. N. McWhorter, of the Minneapolis Board of Education, and Paul H. Fesler, superintendent of the University Hospitals.

Dr. Francis E. Harrington, Commissioner of Health,

on behalf of friends and fellow citizens, presented Dr. and Mrs. List with a beautiful silver tea and coffee set.

Dr. Richard Olding Beard, chairman of the Committee on Arrangements, speaking in behalf of the citizens of Minneapolis, presented Dr. List with a Testimonial printed in illuminated colors and bound in a beautiful leather case.

#### SHORT COURSE IN TUBERCULOSIS

A one-day short course in tuberculosis is to be held at the state sanatorium at Ah-Gwah-Ching, Minnesota, November 6, 1930, in response to requests from physicians throughout the state. The short course is being sponsored by the Minnesota Public Health Association. Dr. H. A. Burns, superintendent of the Ah-Gwah-Ching Sanatorium, will be in charge.

Features on the morning's program include a paper by Dr. W. H. Ude on some phase of roentgenology in relationship to tuberculosis, a paper by Dr. E. K. Geer on "Collapse Therapy," and brief talks by Dr. B. Borreson and Dr. R. R. Hendrickson of the sanatorium staff on "Surgical Tuberculosis" and "The Incidence of Tuberculosis in Cass County," respectively.

During the early afternoon each visiting physician will study the history and make an examination of one patient. All physicians will then meet and discuss the findings. There will also be a question box and any individual problems of the visiting physicians will be discussed at this time.

This short course forms a part of the statewide Christmas Seal work. It is the third to be held at the state sanatorium. Registration is limited and those desiring to attend are urged to communicate with the Minnesota Public Health Association, 11 West Summit Avenue, St. Paul.

#### INACTIVE DUTY TRAINING SCHOOL, ROCHESTER, MINNESOTA, NOVEMBER 9-23, 1930

The second annual inactive duty training period for medical reserve officers will be held at Rochester, Minnesota, November 9 to 23, under the sponsorship of the Mayo Foundation; directed and personally supervised by instructors of the Medical Corps of the United States Army detailed to Rochester for the purpose. The curriculum embraces basic subjects essential to all medical officers.

The school offers opportunity for officers who have not received summer training to earn one hundred hours toward the required number for promotion at the expiration of their respective periods of appointment. The instruction covers a period of fourteen days of seven hours each. All medical reserve officers are eligible.

Any physician wishing to join the reserve corps should apply at once for a commission and when commissioned will be qualified to register for the course.

The course of instruction is arranged so as to allow visiting officers to attend clinics in the mornings and school of instruction during the afternoons and evenings.

Last year's course proved very profitable. Several

officers of various branches of the regular army visited the school.

Medical reserve officers interested should write Colonel Louis B. Wilson, The Mayo Foundation, Rochester, Minnesota.

## OBITUARY

### M. L. Stiffler 1887-1930

Dr. M. L. Stiffler, who has been in charge of the Saint Paul Child Guidance Clinic for the past six years, died very suddenly on September 7, 1930.

Born at Bedford, Pennsylvania, forty-three years ago, Dr. Stiffler attended Oberlin College for three years and obtained his M.D. from the University of Colorado.

Following the World War, during which he served in the medical corps, Dr. Stiffler was associated with the Veterans Bureau in Minneapolis. When the Child Guidance demonstration was instituted by the Carnegie Foundation at the University, he became associated with that undertaking for two years, and in 1924, when the Saint Paul clinic was established by the Wilder Charities, he assumed charge.

Because of Dr. Stiffler's interest in children, he served as a member of the Boy Scout Council in Saint Paul. He was also a Rotarian and in college joined the Beta Theta Pi fraternity.

Dr. Stiffler died the day before the opening of the Minnesota Conference of Social Work in which he was to have taken part. He is survived by his widow, a daughter Suzanne, aged 11, and a son Charles, aged 7.

### John A. Lyng 1864-1930

#### IN MEMORIAM

On September 27, 1930, when at his home in Minneapolis Doctor John A. Lyng was suddenly stricken dead. A good colleague and a man of more than ordinary ability was thereby removed from our profession and the ranks of organized medicine. It was the good fortune of the writer to have known our deceased colleague for many years, and in appreciation of his long friendship these obituary remarks are therefore given a more personal coloring.

Dr. John A. Lyng was born in the city of Namsos, Norway, December 25, 1864, the youngest of several sons born to a cultured and well favored family; he was educated in the schools of Norway in keeping with the ideals and cultured traditions of his family.

In the latter eighties of the past century he came to the United States of America and took up his residence in Minneapolis, where a brother of his owned and conducted a drug store. While there he entered the University of Minnesota and was graduated from its medical department in 1890, since which time he has practiced his profession in Minnesota.

Rather early he evidenced a preference for surgery



because his first appointment was that of surgeon for the Soo Railway Company. Next we find him giving his adopted country the benefit of his services during the Spanish-American War as an officer in the United States Army medical corps in Cuba.

At the conclusion of this war he returned to Minnesota and now established a successful medical practice at Alexandria and later at Fergus Falls, in both places gaining an enviable reputation as a conscientious physician and a skillful surgeon. For the last twelve years he again made Minneapolis his home, and was buried there October 1, 1930, in Lakewood cemetery, his mortal remains being escorted to their last resting place by a large throng of professional and masonic friends.

Dr. Lyng was a loyal member of our profession, continuing his membership from the Park Region Medical Society over into Hennepin County Medical Society, Minnesota State Medical Society and American Medical Association; he was also a charter member of the Thulian Club of the University of Minnesota and a member of the Veterans of Foreign Wars.

He is survived by his wife, Else Froedtert, from Milwaukee, Wisconsin, and his son John; also a brother living in Norway and a number of more distant relatives.

From his many travels both in this country and abroad as well as from his constant studies, he remained a true scientific student all his life. Dr. Lyng had developed into a capable and sound surgeon and when he moved back to Minneapolis as before stated, it was undoubtedly with the plan and ambition of building up a surgical practice in our metropolitan sister city, and this goal not having been reached can safely be attributed to the change that took place in his health, and for a number of years caused his invalidism. A coronary arteriosclerosis with a myocardial lesion, quite often manifesting itself through very painful attacks of angina pectoris not only brought about this change in his professional career but also finished his earthly labors in the sudden manner above mentioned. And thus we mourn the loss of a proficient, upright colleague and a fellow citizen, who was rich in the profession of a strong character and a mind unafraid. "Requiescat in pace."

E. KLAIVENESS, M.D.

### George S. Davis

1845-1930

Mr. George S. Davis of the firm of Parke, Davis and Company, following a considerable period of poor health, died recently at the age of eighty-five.

A native of Detroit, Michigan, he began his career as a clerk in a retail drug store. Later he went into the wholesale drug business and in 1867 became associated with the pharmaceutical manufacturing concern of Duffield, Parke and Company. In 1871, Mr. Duffield retired and the present firm name of Parke, Davis and Company was adopted. Mr. Parke retired from active business over thirty years ago.

George S. Davis showed unusual ability in discovering, developing and organizing men, which was a big

factor in the rapid expansion of his business concern. His original methods were largely responsible for the dawn of a new era in supplying the pharmaceutical needs of the medical profession.

### QUEENE ELIZABETH'S MEDICINE FOR A COLDE

The following prescription apparently devised or recommended by Queen Elizabeth is taken from "A Booke of Phisicke, Surgery, Preserves and Cookery, with Sondry Other Excellent Receipts," printed about 1615.

"Take a quart of newe milke, put into it 2 sponefulls of honey, 4 ounces of linseed, and as it boyles put in peeces of scarlett or redd cloth and laye one peece on your stomack and one opposite to that on the backe, and soe goe to bedd: sweat and you shalbe well."

Despite inferences to the contrary that might be drawn from the title, the volume referred to is confined entirely to medicine and contains a very extensive and interesting collection of medical recipes including "An oymnt to anoynt the side in a Plurisy, A SIRRUP for the Lungs, A purgation against Melancholly, A Remedy for them that have sore Eys, For one that cannot brooke his meat nor digest it, To help a Sciatica, &c."—*Health News*, Sept. 1, 1930.

### BLACKTONGUE PREVENTIVE VALUE OF LARD, SALT PORK, DRIED GREEN PEAS, AND CANNED HADDOCK

For several years the Public Health Service has been conducting studies relating to nutritional diseases with particular reference to pellagra. A report recently made public indicates that the blacktongue preventive potency of lard, salt pork, dried green peas, and canned haddock has been studied. The results show that lard and salt pork are poor sources of the blacktongue preventive. Canned haddock contains the blacktongue preventive factor and, when used in relatively large proportion, the clinical manifestations of blacktongue are prevented. Dried green peas contain the blacktongue preventive but in relatively small amount. Fifty per cent or more of the test animals on the lard, salt pork and haddock diets showed post-mortem evidence of fatty degeneration of the liver.

### METHODS OF FAVORING BILE DRAINAGE

Proprietary mixtures containing phenolphthalein, bine the experimentally demonstrated stimulants to bile secretion (salicylic acid and menthol) with the bile ex-inadequate) and the laxative action of phenolphthalein. The Karlsbad treatment, consisting of the ingestion of vogue some years ago. This was an attempt to combat alkaline laxative mineral waters, is another way of aiming at the same result, which has centuries of favorable experience in its favor. Either the natural or the artificial Karlsbad salt (N.F.) may be taken by the teaspoonful to a tumblerful of hot water half an hour before the larger meals. (Jour. A. M. A., June 7, 1930, p. 1861.)

## A PAGE FORUM OF THE COMMITTEE ON PUBLIC HEALTH EDUCATION

### IMMUNIZATION AGAINST DIPHTHERIA

Vaccination has been accepted the world over in combating smallpox, in spite of the fact that at least every seven years the vaccination must be repeated. Immunization against diphtheria has been even more successful, because in all but exceptional cases, only a single series of inoculations is necessary. Established immunity, as proved by a negative Schick test, protects the subject for life.

In the past, most of the work in immunization has been done on the school child; children of the preschool age have been neglected to a considerable degree. Inasmuch as the passive immunity with which children are born persists about four to six months, it is evident that if all children are to be protected the immunization against diphtheria must be carried out in the first year of life; the period of preference is from the sixth to the twelfth month. At this age the child can be inoculated with little discomfort and with few of the severe reactions that are occasionally observed in older children and adults.

The material of choice for this immunization is the modified toxin—the so-called toxoid or anatoxin. This does not require the use of antitoxin, which, in some cases at least, seems to have rendered the child susceptible to a serious reaction from later serum injections. The results have been so uniformly good, and the severe reactions in the first few years of life have been so conspicuously absent, that in this period the use of toxoid is preferable to the use of toxin-antitoxin. For older children to prevent severe reaction a preliminary test may be necessary before toxoid is used; or instead of a toxin, a toxoid combined with antitoxin made with sheep serum rather than with horse serum may be used.

Six months after the inoculation it is necessary that a Schick test be done to determine immunity, since there are a few children in each 100 who are not immune. From 95 to 98 per cent of children who are inoculated are rendered immune.

The medical profession and all public health workers are solidly behind the campaign to eradicate diphtheria, and every physician should consider it his duty to see that all children under his charge are immunized against diphtheria.

HENRY F. HELMHOLZ, M.D.

An illustrious group of names shines forth in the history of the conquest of diphtheria. We have a complete armamentarium for the eradication of this disease in civilized nations. Its virulence can be determined. Usually its lesions are easily recognized and, if not, a twenty-four hour pause for laboratory examination reveals the invader. Carriers can be identified. By the Schick test susceptibles can be isolated. The disease is so curable that it is more or less of a disgrace to lose a case. And, finally, the prevention has long been possible with the use of toxin-antitoxin. Even this has been improved and the use of toxoid makes the immunization much more definite and more easily accomplished.

It seems, however, that the medical profession of our own State has let down a little in the spreading of the propaganda of diphtheria immunization. In isolated communities a larger percentage of the children have been immunized, but the percentage throughout the State is not so great as might be desired. The material is furnished by the state. A moderate fee for doing this work is fair. If we fail to advocate and do this work, and for a moderate charge, the State will do it free. Here is one disease about which we know much and which can be prevented.

C. A. S.

## MISCELLANEOUS

### MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

#### UNLICENSED DOCTOR ENTERS PLEA OF GUILTY

State of Minn. vs. Dufort

On October 9, 1930, J. E. Dufort of Northome, Minnesota, entered a plea of guilty before the Honorable Judge Wright of International Falls. The defendant was charged with practicing medicine without a license. Dufort has been located at Northome for the past twenty years and has never possessed a license to practice medicine in this state or elsewhere. He was arrested in 1928, charged with violating the Basic Science Law. He continued to violate the law with the result that in June 1930, he was again arrested for the same offense. The Court sentenced Dufort to a term of one year in the county jail and to pay a fine of one hundred dollars. The Court suspended the sentence on the following conditions:

1. The defendant must leave the county.
2. The defendant must refrain from practicing healing in any way, shape or manner irrespective of whether a fee is charged or not.
3. The defendant must not be charged with violation of any other statute of this state.
4. The defendant must report once every ninety days in writing to the Judge of the District Court, giving his occupation and present place of residence.

Dufort was very fortunate in escaping a jail sentence because of his previous good fortune before the Court. A number of citizens from Northome interceded for Dufort but they were warned by the Court not to interfere in this matter again. The defendant was not licensed and apparently had no chance of getting a license and will be placed in the county jail for the slightest infraction of the law. The matter was handled by Mr. Brist on behalf of the State Board of Medical Examiners.

#### MEDICAL ETHICS

Apropos our recent editorial on Physicians and Advertising which appeared in the October number of MINNESOTA MEDICINE, we are reproducing a letter written by the Chairman of the Publicity and Education Committee of the Hennepin County Medical Society to the Minneapolis Journal in reply to a number of editorials which have recently appeared in that newspaper. Most physicians, we feel sure, have never read the Code of Ethics which embodies the printed rules of conduct for physicians adopted by our national association. The universal rules of gentlemanly behavior which include the Golden Rule, along with local convention as to professional procedures, are sufficient for most of us. On the other hand, the presentation of the accepted Code of Ethics to new members of County Medical Societies as practiced by the Hennepin County Medical Society

would be well imitated by all county organizations.—  
EDITOR.

To the Editor of The Journal  
Minneapolis, Minnesota

Your recent editorials, "The Vagaries of Medical Ethics" and "Why Fight in the Dark," require elucidation and comment, if only because of their utter lack of any specific or constructive criticism or suggestion that might help to remedy what you seem to consider a very unsatisfactory situation.

Does it not strike you as somewhat peculiar that that "ancient relic," the medical code of ethics, has been "shot full of holes" every day at least for more than a thousand years, often by much more skillful shooters than even the editor of the Detroit Lakes Record, whom you quote, and still not only survives but thrives, naturally so since it is founded on the principles of a still more ancient relic, the "Golden Rule" which can never die?

Is not your own statement that quacks and charlatans have grown rich by advertising a very illuminating commentary on what would be sure to happen if the section on advertising was expunged from the code of ethics? Would the final result not be merely that the best advertiser and not the best doctor would sell the most medical services? In the final analysis, what has any doctor to advertise unless merely his skill? In this day and age it is not possible for any doctor, working without collaboration, to devise and use alone successfully any method, remedy, or technic which is not certain shortly to become the property of the profession at large. Medicine has ten thousand eyes and it would be a very dishonest doctor, indeed, who advertised the possession of any advantage in these regards.

Possibly there is some doctor whose skill entirely transcends the average. He has some strange intuitive power of diagnosis, some greater penetration in his look, a finer "tactus eruditus" in his finger tips. Possibly he is even the seventh son of a seventh son. But, after all, would not the advertising of such transcendent skill be repulsive to every finer instinct? And who, indeed, is to be the judge of his skill? He may be entirely over-estimating himself, probably is, and there is nothing about which the public is more easily deceived. Some of the doctors who have the largest practices are by no means the most scientific, the most skillful, the most earnestly devoted to the interests of the public itself. Even the fact that a certain doctor has apparently brought about cures where others have failed, is not of itself any certain criterion of his comparative skill.

But who constituted the State Editorial Association as the arbiter of ethics? If the State Medical Association which, by the way, has nothing to do with devising a code of ethics for the medical profession, except by virtue of its influence with, and its membership in, the American Medical Association—feels that it should delegate the revision of the code of ethics to any outside group, why, for instance, should it not choose a group from the Ministerial Association, from

the Civic and Commerce Association or from the Bar Association? Could it not delegate this to any one of these groups with a feeling that they would be at least disinterested in their consideration of the subject, whereas, if it were delegated to a group from the Editorial Association, would it not be sure that the cards were stacked at least against the section on advertising?

But perhaps your editorials refer, in the main at least,—though, if so, you certainly do not make it clear—to what might be called collective advertising, which after all is nothing more or less than a form of medical education of the public. The writer is a doctor, who happens to be at present, and has been for some years, Chairman of the Publicity and Education Committee of Hennepin County Medical Society, and has certainly given this matter a great deal of attention. There are very serious obstacles in the way of any such program on a large scale, though the medical profession is doing what it can under present conditions and will undoubtedly do far more in the future. Still, it may fairly enough be asked why the burden of such a program of publicity and education should fall on the medical profession at all. Why should not the burden be taken up by public institutions of education, if the work that medicine is doing is really a beneficent work and in the interest of the people? For there are, after all, only comparatively few things that it should be necessary to teach and publish—first of all, I should say, the simple rules of hygiene, with as little reference as possible to disease and its symptoms. But in the second place, people should be taught that, while even the doctors know little, in the face of the unexplored ocean of knowledge that confronts them, they still know infinitely more about the human body, perhaps even about the human mind, and certainly infinitely more about the cause, symptoms, and treatment of disease than anyone else whatsoever, and that it would, consequently, be wise for those who need help to turn to them. I would also add a third thing in which it is apparently necessary to educate the public. I refer to the origin, the growth, the scope and the purpose of the medical code of ethics, which exists for their protection and not for the aggrandizement of the medical profession.

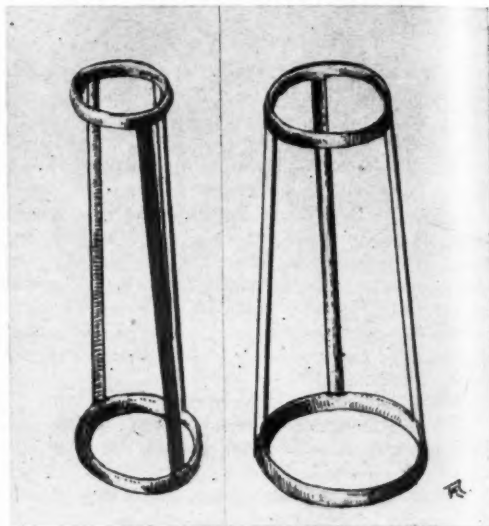
J. A. WATSON, M.D.

#### A NEW FINGER SPLINT

The writer recently suffered a drop-finger, due to hyper-flexion, causing a separation of the extensor tendon from the terminal phalanx. The usual splints, with adhesive, etc., were uncomfortable, uncleanly, and very bulky. I then devised a splint which possessed none of these disadvantages. This consists of two metal rings, one fitting over the end of the finger about one-fourth inch from the tip; the other, just large enough to slip over the proximal phalanx, and resting in the groove between the finger and the palm. The two rings are connected by three bars, one on each side of the finger, and the third over the dorsum of the finger. This holds the finger in fixed extension, but permits the hand to be washed, and to perform most

of its usual function, without the inconveniences associated with most splints. The splint would serve as well for dislocations or fractures of the phalanges if the metacarpo-phalangeal joint does not also require fixation.

This splint was easily and inexpensively made in a



dental laboratory, the length and circumferences of the finger being first measured.

Platinoid metal was used, the parts being 1/16 inch thick, and 1/8 inch wide; the splint weighed only one-half ounce. German silver will serve equally well. While the principle of the splint is not particularly new, the writer was unable to find anything like it in the instrument houses.

THOMAS MYERS, M.D.  
St. Paul, Minnesota.

#### ANTIPNEUMOCOCCUS SERUM

Antipneumococcus Serum Combining Types I and II Pneumococci, and Refined and Concentrated Antipneumococcus Serum (Lederle) Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that it has accepted for New and Non-official Remedies preparation of antipneumococcus serum for Type I pneumococcus infection and that at present this is the only type in which the efficacy of serum has been sufficiently established to warrant general use. The Council reports that there is some evidence that Type II serum concentrated by the Felton method is of service if given early and in large doses, but that there are other reports which indicate inefficacy. In consideration of the present available evidence, the Council declared all serum preparations combining Type I and Type II pneumococci, including Refined and Concentrated Antipneumococcus Serum (Lederle) unacceptable for New and Non-official Remedies. (Jour. A. M. A., September 27, 1930, p. 935.)



## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### MEDICAL BROADCAST FOR THE MONTH The Minnesota State Medical Association Morning Health Service

The Minnesota State Medical Association broadcasts weekly at 11:15 o'clock every Wednesday morning over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters).

*Speaker:* William A. O'Brien, M.D., Associated Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota.

The program for the month of November will be as follows:

- November 5th—Poliomyelitis.
- November 12th—Treatment of cataract.
- November 19th—Carcinoma of the lip and mouth.
- November 26th—Psoriasis.

### TENTATIVE PROGRAM FOR MEETING OF MINNESOTA SOCIETY OF INTERNAL MEDICINE

Rochester, Minnesota  
November 10, 1930

#### MORNING SESSION

- "An unusual deficiency syndrome secondary to duodenal occlusion".....ALBERT M. SNELL
- "An unusual type of congenital heart lesion".....EDGAR T. HERRMANN
- "The application of the string galvanometer to the diagnosis of adherent pericardium".....MORRIS H. NATHANSON
- "Transient atrioventricular conduction disturbance following strain".....PAUL G. BOMAN
- "What is Grace Medes Tyrosinosis?".....HILDING BERGLUND
- "Subcutaneous emphysema with a case report".....JOHN A. LEPAK
- "Tests of renal function in patients with prostatic hypertrophy with special reference to phenolsulphonphthalein" (by invitation).....HAROLD C. HABEIN
- A synopsis of the recent symposium on renal disease at the University of Minnesota
- "The features of clinical interest brought out at the Symposium".....MOSES BARRON
- "The theoretical features particularly in regard to the normal and disturbed kidney function".....GEORGE FAHR
- Discussion opened by Norman M. Keith

#### AFTERNOON SESSION

- "The principles underlying the recent attempts at classification of arthritis".....MORSE J. SHAPIRO
- "Further observations on the feeding of swine in cases of pernicious anemia".....H. MILTON CONNER
- "Agranulocytic angina".....RUDOLPH C. LOGEFEIL
- "The development of tuberculosis among nurses".....EVERETT K. GEER

"An unexploited therapeutic opportunity in periodic health examinations of young adults" (by invitation)

.....NORMAN JOHNSON

"A study of migraine in University students" (by invitation).....LEWIS DANIEL

"The cortical hormone of Swingle and Piffner in the treatment of Addison's disease"

.....LEONARD G. ROWNTREE

Symposium on experimental peptic ulcer

FRANK C. MANN (by invitation)

EDWARD C. ROSENOW (by invitation)

GEORGE B. EUSTERMAN

#### EVENING SESSION

Address—"Energy" (by invitation).....CHARLES SHEARD

### NORTHERN MINNESOTA MEDICAL ASSOCIATION

At the annual meeting of the Northern Minnesota Medical Association, held at Moorhead, Minnesota, September 29 and 30, 1930, the following officers were elected for the ensuing year: President, Dr. B. S. Adams, Hibbing; vice president, Dr. G. S. Wattam, Warren; secretary-treasurer, Dr. O. O. Larsen, Detroit Lakes.

Hibbing was chosen for the 1931 meeting, which will be some time in August.

The meeting was addressed by Mr. Lou Beaushoop, editor of the Detroit Record, who told the ninety physicians attending the banquet at the Comstock Hotel that the medical code of ethics is "too restrictive" and that the public suffers because of the failure of reputable doctors to make full use of the press.

The Reverend Dr. Sainsbury, Fargo, also a speaker at the banquet, explained in detail England's compulsory health insurance, which creates a "consciousness of health in all minds." He, however, declared it was not likely that this system would be applicable in the United States.

Dr. H. C. Cooney, Princeton, delivered the presidential address, calling attention to the fact that the profession had made greater progress in the last forty years than in the 2,000 years preceding.

Dr. A. E. Meyerding, State Secretary, commenting on Mr. Beaushoop's address, urged newspapers to seek authentic sources for medical information in order to insure correctness and called attention to the fact that the organized profession is prepared to coöperate with the press.

O. O. LARSEN, M.D.

Secretary.

### PARK REGION DISTRICT AND COUNTY MEDICAL SOCIETY

The annual meeting of the Park Region District and County Medical Society was held in Alexandria, October 8, 1930. The following officers were elected: President, Dr. A. J. Lewis, Henning; vice president, Dr. F. Naegeli, Fergus Falls; secretary-treasurer, Dr. E. A. Heiberg, Fergus Falls.

A series of lectures on various cardiologic subjects was begun with a discussion of "The Management of

the Ambulant Cardiac Patient" by Dr. G. E. Fahr of the University of Minnesota. The Society and Auxiliary were the guests of the Park Region District Druggists Association at dinner. The non-members of the district were invited to attend this meeting, and an appeal was made to them to become active members. The Society is now conducting a Postgraduate University Extension Course, with about 30 members in attendance.

#### WEST CENTRAL MINNESOTA MEDICAL SOCIETY

The annual meeting and banquet of the West Central Minnesota Medical Society was held at the Merchants Hotel, Morris, Minnesota, October 8, 1930. Dr. A. T. Arneson of Starbuck read a paper on "Blood Chemistry" and Dr. C. L. Scofield of Benson a paper on "The Relation of Physicians to the State Board of Health."

The following officers were elected for the ensuing year: President, Dr. A. E. Eberlin, Glenwood; vice president, Dr. E. T. Fitzgerald, Morris; secretary-treasurer, Dr. A. L. Lingberg, Wheaton.

The next regular meeting will be held jointly with the Kandiyohi-Swift County Medical Society at Benson.

CHARLES BOLSTA, *Secretary*.

#### HOUSTON-FILLMORE COUNTY MEDICAL SOCIETY

A meeting of the Houston-Fillmore Medical Society was held at Harmony, Minnesota, September 25, 1930.

A letter from Dr. Herman Johnson was read. Mr. Brist then gave a talk on the work done by the State Board of Medical Examiners which was followed by a talk on "Gastro-intestinal Diseases of Children," by Dr. Kennedy of the Mayo Clinic.

The following officers were elected: President, N. E. Anderson, Harmony; vice president, C. B. Eby, Spring Valley; secretary, R. N. Palmer, Lanesboro; treasurer, J. C. Lannin, Mabel.

Dr. William E. Johnson of Caledonia, Minnesota, was elected to membership.

J. W. HELLAND, M.D.  
*Secretary*.

#### SCOTT-CARVER COUNTY MEDICAL SOCIETY

The regular meeting of the Scott-Carver County Medical Society was held at Belle Plaine, Minnesota, on Tuesday, October 14, 1930. Dr. M. O. Henry of Minneapolis spoke on fractures and presented motion pictures of Boehler's method of treating fractures. The invitation of Dr. Fred Westerman to meet at Montgomery in November was accepted.

B. H. SIMONS, *Secretary*.

#### RICE COUNTY MEDICAL SOCIETY

Rice County Medical Society held a meeting Tuesday, September 23, 1930, in the main building at the State School for Feeble Minded at Faribault.

Dr. A. M. Hanson, delegate, reported on the meeting of the Minnesota State Medical Association.

Dr. D. W. Francis of Morristown read a paper on "Pneumonia."

C. J. PLONSKIE, *Secretary*.

#### WASHINGTON COUNTY MEDICAL SOCIETY

The Washington County Medical Society held their October meeting at the Stillwater Club rooms. The guest speaker was Owen H. Wangenstein, M.D., Department of Surgery, University of Minnesota. His subject was "Cancer of the Stomach." He gave us a wonderful lecture with fine illustrations. It took him about two hours to deliver this. It was followed by a discussion or rather questions by members of the local society; the questions were very well answered. We feel that we received a great amount of valuable information and appreciate greatly Dr. Wangenstein's kindness in addressing us. Outside doctors were Dr. Simonstad and Dr. Gleeson of Osceola, Wisconsin.

E. SYDNEY BOLEYN, *Secretary*.

#### RED RIVER VALLEY MEDICAL SOCIETY

A meeting of the Red River Valley Medical Society was held at Warren, Minnesota, October 9, 1930.

The following scientific program was presented: Sciatica—Dr. A. P. MacKINNON, Winnipeg. Fractures of the Upper End of the Femur, not including the Hip—Dr. R. C. WEBB, Minneapolis. Hip Fractures—Dr. O. J. ENGSTRAND, WARREN. Some Phases of Organized Medicine—Dr. S. H. BOYER, Duluth. Observations of European Clinics—Dr. H. W. FROELICH, Thief River Falls.

C. L. OPPEGAARD, M.D.  
*Secretary-Treasurer*.

#### LYON-LINCOLN COUNTY MEDICAL SOCIETY

At a meeting of the Lyon-Lincoln County Medical Society held in Marshall, October 1, 1930, the following officers were elected:

W. W. Yaeger, Ivanhoe, Minn. President  
E. L. Erickson, Hendricks, Minn. Vice President  
H. M. Workman, Tracy, Minn. Secretary and Treasurer  
A. D. Hoidale, Tracy, Minn., Censor 3 years  
E. L. Sanderson, Minneota, Minn. Delegate  
A. L. Vadheim, Tyler, Minn. Alternate

The Society opened their second Clinical Course with Doctor Rood Taylor on "Pediatrics." Twenty-six were present.

H. M. WORKMAN, M.D., *Secretary*.

#### ST. LOUIS COUNTY MEDICAL SOCIETY

The annual meeting of the St. Louis County Medical Society was held Thursday, October 9, 1930, following a banquet at the Northland Country Club, Duluth, Minnesota.

The officers elected for the coming year were: President, Dr. F. J. Lepak, Duluth; vice president, Dr. T. A. Estrem, Hibbing; secretary-treasurer, Dr. Mario Fischer, Duluth.

Censors for the coming year are: J. M. Robinson, Duluth; E. L. Tuohy, Duluth, and B. F. Davis, Duluth.

Delegates to the Minnesota State Medical Association are: C. L. Haney, Duluth; B. S. Adams, Hibbing; J. R. Manley, Duluth; F. H. Magney, Duluth; Alternates—O. W. Parker, Ely; C. A. Scherer, Duluth; B. F. Davis, Duluth; A. N. Collins, Duluth.

The meeting was addressed by Dr. E. W. Sainsbury of Fargo, North Dakota, who discussed his recent travel experiences in Europe, including Russia, and certain phases of the medical economic problem in Great Britain.

M. McC. FISCHER, M.D.,  
*Secretary.*

#### WRIGHT COUNTY MEDICAL SOCIETY

The annual meeting of the Wright County Medical Society, and election of officers, was held at Buffalo, Tuesday, October 7, 1930.

Officers elected are: President, Dr. John J. Catlin, Buffalo; vice president, Dr. Verner P. Johnson, Delano; secretary-treasurer, C. L. Roholt, Waverly.

Dr. E. Klaveness, Monticello, was elected as delegate to the state meeting, with Dr. O. J. R. Freed, Cokato, as alternate.

JOHN J. CATLIN, M.D.  
*Secretary.*

#### EPHEDRINE AND HABIT FORMATION

An article appeared in a recent issue of the Ladies Home Journal in which it was stated that ma huang is closely related to cocoa and that it is as dangerous as the narcotics of the cocoa group. It stated: "Ma huang . . . has cocaine's effects—it is exhilarating, habit forming, deadly." Chen and Schmidt in a recent monograph, "Ephedrine and Related Substances" state that investigators appear to agree that the prolonged use of ephedrine does not have any cumulative harmful effects and does not result in habit formation. In New and Non-official Remedies, no reference is made to habit-forming properties of the drug. A search of the Quarterly Cumulative Index Medicus fails to reveal published articles on ephedrine as a habit-forming drug. Though it is known that the actions of ephedrine on the central nervous system resemble considerably those of cocaine, it is not believed that these are sufficiently pleasant to be a temptation; certainly the effects cannot be at all serious, or they would have become apparent before this. In a recently published report of the effects of ephedrine on animals it is stated that in humans, after prolonged use against asthma, it produced euphoria, and reports where the drug had to be discontinued on account of unpleasant stimulation. The absence of clinical reports of addiction does not substantiate the careless references of popular writers to habit formation. The available evidence indicates that there is little if any danger of ephedrine becoming a serious habit former. (Jour. A. M. A., September 3, 1930, p. 731).

## PROCEEDINGS MINNESOTA ACADEMY OF MEDICINE

Meeting of September 10, 1930

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, September 10, 1930. Dinner was served at 7 o'clock and the meeting was called to order by the President, Dr. Emil S. Geist, at 8 p. m. There were 42 members present.

Minutes of the May meeting were read and approved.

The Secretary also read the report of the Executive Committee meeting of August 7th and a motion was carried that this be adopted.

Upon ballot Drs. F. L. Adair and F. W. Schlutz, formerly of Minneapolis, and Dr. H. C. Cooney of Princeton were elected to Honorary Membership in the Academy, and Dr. F. F. Callahan of Pokegama Sanatorium was elected to Associate Membership.

Owing to Dr. Alexander Stewart's inability to be present, his Thesis on Serotherapy in Scarlet Fever was not read at this meeting.

DR. A. A. ZIEROLD (Minneapolis) then read his Thesis, entitled "Morphine as a Diagnostic Agent."

#### DISCUSSION

DR. A. T. MANN (Minneapolis): I think this paper brings up a very interesting subject. I remember when I first came here the older surgeons spoke about the differentiation of rigidity by the use of morphine but they certainly did not work with it in such a careful way or go so far into its logical basis. There is a great deal of truth in the paper. I think our old idea of the withholding of morphine in abdominal conditions pivots around the fact of whether a thorough examination has been made before the morphine has been given. Personally, I can't see any reason at all for withholding morphine after a thorough and careful examination has been made and diagnostic judgment has been used. There is no doubt at all about administering morphine at that time and I think it is a very valuable thing.

Abdominal pain and abdominal tenderness are two different things. There was nothing brought out in the paper in regard to tenderness. We do get tenderness in various places from troubles at a distance. For example, we can have the tenderness that is ordinarily associated with gallbladder or with ulcer of the duodenum, from appendicitis or from an inflammation in the pelvis because of the distribution of the lymphatics. The tenderness which we ordinarily get with appendicitis comes apparently quite definitely over the first lymphatic group at the base of the mesentery, i.e., under McBurney's point. The appendix travels around like the spoke of a wheel but the tenderness stays where the root of the appendix is. If that continues for some time and some of the inflammation leaks through this first bunch of glands into the next ones, which are just to the right of the aorta, then we have a second point of tenderness, Morris' point of tenderness, about one and a half inches from the midline, i.e., over the juxta-aortic glands. If the inflammation trav-

els up this chain of lymphatics it may reach the upper glands of this chain at the level of the duodenum and give a deep point of tenderness suggestive of the tenderness elicited from a duodenal ulcer or sometimes that from an infected gallbladder.

The question I should like to ask the essayist is, what influence these changes would have on the abdominal rigidity and the influence of the morphine on these changes.

DR. W. F. BRAASCH (Rochester): The paper this evening is a most interesting one and the Doctor is to be congratulated upon his thesis. I was particularly interested in one case in which epigastric pain was predominant and after the administration of morphine the pain was referred to the appendix. The relationship between epigastric pain and appendicitis is clearly emphasized.

As far as the urinary tract is concerned, the areas of pain reference as described by Head and others have not proven to be of value in the localization of pain. With stone in the ureter the pain is almost always referred to the renal area. After the administration of morphine the pain either remains in the kidney area or it is stopped. I do not recall any case where the renal pain was transferred to the ureter after the administration of morphine. As far as the bladder is concerned, bladder pain very seldom has to be differentiated and therefore is not strictly applicable to these theories.

Somewhat related to this subject is the work of Learmonth in disturbance of innervation of the bladder, recently published in *Surgery, Gynecology and Obstetrics*. Bladder innervation and various types of pain and disease of the bladder are discussed, together with original observations on physiology. We have observed a number of patients with unbearable pain referred to the bladder who were completely relieved by sympathectomy without disturbing the mechanical action of the bladder. The whole subject of the innervation of intra-abdominal, as well as urinary, organs is one of great interest and I believe there will be much progress made in this field.

DR. E. L. GARDNER (Minneapolis): I have seen some of Dr. Zierold's work at the General Hospital and know that it is good clinical observation. Almost twenty years ago I had the privilege of being with Dr. J. W. Bell for a while, and there were two procedures which he regularly used. One was the old-fashioned hot tub. A patient with an acute abdomen was put into a hot bath and the abdomen palpated while in the tub; this often relieved rigidity and helped to localize the lesion. The other method was to give  $\frac{3}{4}$  of a grain of morphine and proceed with the examination. This diffuse type of pain and generalized rigidity seems to occur in certain high-strung individuals. Even in chronic conditions, such as in duodenal ulcer, it is not infrequent to have the primary pain referred to the upper epigastrium. Very soon, if this patient is irritable, we sometimes have a "slopping over" of pain and muscle spasm to segments above, or less often, below. By taking a very careful history in these cases

we can often arrive at a pretty good diagnosis without laboratory procedures.

I think Dr. Zierold's contribution is a good one. It brings to us an old procedure better explained in modern physiologic terms.

DR. J. S. GILFILLAN (St. Paul): This paper is a very valuable one and I think it explains a little more clearly to us why we get the alteration in abdominal rigidity after giving morphine. We used to feel a little hesitancy in giving morphine in acute abdominal conditions and my own idea was that there was some danger until we had decided definitely whether or not an operation was to be done. One danger in giving morphine is to get the patient to consent to operation after you have taken the pain away. I was wondering, as I listened to the paper, if the same procedure might be applied to extra-abdominal conditions.

DR. ZIEROLD (in closing): You have all been very generous and I appreciate the kindly consideration that you have shown me. The questions are all very fair ones and I think can be reasonably well met.

Dr. Gilfillan commented on the possibility of using some such procedure as this in the diagnosis of joint conditions. I have been trying to check some of the chronic joint conditions but haven't enough clinical material as yet. I do know that in hip-joint disease morphine will resolve the spasm to its proper segment. I have found it to work very satisfactorily in acute joint infections, particularly in children.

Dr. Mann presented the question of pain and tenderness. I purposely avoided stressing pain and tenderness. They are more or less an incident in muscle spasm. As a result of the pain there is a purposeful spasm. The simple contraction of muscle not attended by pain is a simple reflex. As Dr. Mann so well noted, the pain and tenderness may occur in remote and rather bizarre places.

Dr. Braasch raised again that same point with regard to tenderness and brought up very aptly Head's theory in regard to referred pain, which unfortunately does not always work out. It is interesting to hear of Dr. Learmonth's work on the bladder nerves, particularly when one recalls the difficulties to be overcome.

Dr. Gardner mentioned Dr. Bell's observation, of which he had told me before and which we have discussed previously. He reiterated what I meant to say in the beginning, *i.e.*, that the clinical phase of this phenomenon is not new.

Dr. Ulrich asks as to the effect of morphine; as to whether it reduces or heightens the threshold of reflex stimulation. Morphine affects only the cortical centers. It has no effect on the spasm which is an exaggerated spinal reflex.

DR. WALLACE H. COLE reported a case of "Leg Lengthening of the Tibia in Infantile Paralysis" and showed numerous lantern slides taken before and after the operation. (This paper will be published in the December number.)



The meeting adjourned.

R. T. LAVAKE, M.D.  
Secretary.

Meeting of October 8, 1930

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, October 8, 1930. Dinner was served at 7 o'clock and the meeting was called to order by chairman of the Executive Committee, Dr. F. E. Burch, in the absence of the President and Vice-President, at 8 o'clock. There were 46 members and 2 visitors present.

Minutes of the September meeting were read by Dr. Carl B. Drake, in the absence of the Secretary. These were approved.

Letters were read from Dr. F. L. Adair, Frederick W. Schlutz, of Chicago, and Dr. H. C. Cooney, of Princeton, Minnesota, each thanking the members for his election to honorary membership in the Academy. A letter was read from Dr. R. O. Beard calling attention to the meeting of the Postgraduate Assembly in the Minneapolis Auditorium, the week of October 20th and extending an invitation to attend.

Dr. H. P. Ritchie of St. Paul read the following memorial to Dr. Arthur A. Law:

ARTHUR AYER LAW was born at Harvard, Illinois, April 16, 1872, and died at his home in Minneapolis July 9th, 1930. He was active in attendance upon a large and select surgical practice until May, 1930, at which time some premonitory symptoms developed to a point which required a complete cessation of his work.

After graduation at the Shattuck Military Academy, he entered the University of Minnesota Medical School, from which he received the diploma of Doctor of Medicine with the class of 1894. From that time on he held a teaching position in surgery, advancing through ever increasing responsibility to that of Associate Professor of Surgery and at one time Assistant Chief of the Department. He was a prominent member of the first surgical staff of the University Hospital, which was formed upon the opening of that institution, under the masterly direction of the late Dr. James E. Moore. He took a great part in the development of the school; was positive in his opinions on policies of administration and forms of teaching, was not always in accord with others as becomes a man of individuality, but was ever constant in the hope for, and belief in, the future growth of the school; was generous of his time, tireless in effort, deep in his interest. He was always prompt to meet his lecture engagements; he was exacting in the proper care of his patients. He early developed a reputation, augmented and enhanced as the years went on, as a surgeon known for the dexterity, celerity and precision of his operative work. His association with the University continued until 1929, when upon his resignation he received from the Board of Regents an acknowledgment of his years of service, couched in positive terms of appreciation, a document of which any one would be proud and which a few are entitled to receive.

He was an officer in two wars. In the Spanish American War he was Captain and Assistant Surgeon of the 13th Regiment of Minnesota Volunteers, serving in that position during the entire term of duty with that regiment in the Philippines. In the World War he was Colonel and Commanding Officer of Base Hospital No. 26 and served in France. He received a citation from General Pershing for "service over and beyond the call of duty." This official statement is a fitting epitaph.

He had a standard of impeccable personal conduct, a strict and stern sense of responsibility of his work, a devotion for and to his family. Those who were privileged to enter his beautiful home found in him a thoughtful, generous and gracious host. To his close friends he gave, to quote a favorite and oft-repeated expression, "a touch of the shoulder."

He was a member of other local societies and several of national scope: the American Surgical, the Western Surgical, the Southern Surgical, the American College of Surgeons, to each one of which he has presented contributions to the Science of Surgery. He was long a member of the Minnesota Academy of Medicine and upon the occasion of his death your committee offers the following resolution:

WHEREAS: Arthur Ayer Law has passed from this life, his membership in the Minnesota Academy thereby terminated and personal contact severed

BE IT RESOLVED THAT the Academy of Medicine acknowledge the years of their association, express regrets at his departure, cause the above sentiments to be spread upon the minutes and instruct the Secretary to send a copy to his family.

Signed: H. B. ZIMMERMANN,  
MARTIN NORDLAND,  
HARRY P. RITCHIE, *Chairman.*  
Committee.

The scientific program of the evening was then taken up.

DR. J. CHARNLEY MCKINLEY (Minneapolis) read his thesis entitled "Familial Diffuse Sclerosis of the Brain."

DRS. F. E. FOLEY and ARNOLD SCHWYZER (St. Paul) presented a paper on "An Improved Pelvioureteroplastic Operation for Hydronephrosis." Dr. Foley read the paper which was illustrated with numerous lantern slides.

#### DISCUSSION

DR. H. P. RITCHIE (St. Paul): The only comment which I feel qualified to make on this very excellent presentation is on the question of the flap of the pelvis. The flaps as shown appear entirely too acute. I presume this is only apparent in the illustration and not real in the operation. We know that the life of a flap is dependent on the blood supply to all parts of it. It seems to me that with all the abundant tissues of a dilated pelvis it would be just as easy to prepare the flaps in such a way as to be very sure of the maximum blood supply. I was thinking of the death of some part of the flap and an inflammatory stricture.

DR. FOLEY: I would like to ask Dr. Ritchie about

what angle he would think was best for cutting the flap.

DR. RITCHIE: I suggest a little wider sweep on the tip; a curve and not such an acute angle. In skin flaps, if the flaps are too sharply cut a necrosis of the tip follows.

DR. FOLEY: It would be difficult to make the point of the flap fit down onto the ureter. The flap is quite short. I would say the angle is about 60 degrees.

DR. RITCHIE: I am not familiar with the size of the flap. If it is so cut, my comment is of no value.

DR. SCHWYZER: I am very happy that Dr. Foley took the interest that he did in this procedure. If I was father of the child, he was the doctor who saved the child from the death of oblivion and has shown a modification of the procedure which in appropriate cases yields a perfect result.

In answer to Dr. Ritchie's remarks, of course we want to be sure that we have a living flap. The important feature is that the stricture is held open not by the tip, but by the base of the flap, which is at this point about one centimeter wide. Thus, even if the tip should necrose, which is has not done so far, it would be at least one centimeter away from the danger point. It is, of course, good to watch out for the proper circulation. There should not be any tension on the flap at all.

The meeting adjourned.

R. T. LAVAKE, M.D.  
Secretary.

## TWO MINOR MAIL-ORDER FRAUDS

Chinese Herb Co. of San Francisco, and Webb Co., Springfield, Ill., have been debarred from the mails. The Chinese Herb Co. sold "herb treatments" through the mails for the alleged cure of practically all diseases and ailments. The Webb Co. sold through the mails a mechanical device called the "Adjustor," sold under the claim that it would develop the male sexual organ. (Jour. A. M. A., September 6, 1930, p. 745.)

## VENTRICULIN

The Council on Pharmacy and Chemistry publishes a preliminary report on Ventriculin. It was presented by Parke, Davis & Co. for consideration by the Council as a preparation of desiccated stomach tissues useful in the treatment of pernicious anemia. The Council has postponed definite action in regard to the acceptance of Ventriculin to await (1) presentation by Parke, Davis & Co. of a definitely standardized method of preparation for the product, (2) justification of the name, including a signed statement by Drs. Sturgis and Isaacs concerning the discovery of the use of stomach tissues in the treatment of pernicious anemia, and (3) presentation of adequate clinical evidence for the efficacy of the product in the treatment of pernicious anemia. (Jour. A. M. A., September 13, 1930, p. 797.)

## PROGRESS

### Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

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## EYE, EAR, NOSE AND THROAT

THE SINUS IN PERSPECTIVE: Arthur W. Proetz, M.D., St. Louis (Ann. of Otol., Rhinol. and Laryng., Vol. XXXVIII, No. 3, p. 682, Sept., 1930). We know discouragingly little about sinuses, and only exert a feeble influence upon their welfare.

We know, in a word, that a sinus is an air cavity communicating with the nose; that it is capable of infection and that when its ventilation and drainage are impaired trouble ensues. We know in a general way what are the symptoms of such infections and blockades, and too often we are mistaken even in these. We have devised dozens of more or less ingenious ways of opening these cavities, all for one purpose—to let out infectious material—which sums up virtually the whole of sinus surgery, and cannot be considered a step ahead of the elementary surgical principle of draining an abscess anywhere in the body, as practiced by the ancients. Our treatment plays a pathetic role in the process of repair which Nature institutes and effectively pursues.

Naturally it must remain for the few to make the

epochal discoveries upon which a science grows, but at the same time it is the responsibility of the many to unburden themselves of the charms, curses and fetishes of the past, and to familiarize themselves in extenso with the underlying facts of physiology and pathology. The mere mention of swollen membranes is a red rag to some of us. Swollen ankles merit only passing attention. Pus encountered in the nose is a fair indication that nature is at work successfully expelling noxious agents from our confines, and while I do not view it as a signal for jubilation I see no occasion for hysteria in regard to it.

I am increasingly impressed with the probability that the chronicity of many sinus infections depends not upon the failure of the body to throw off some old initial infection, but upon the daily reinfection with some strain of microorganism to which the subject is nonresistant. It is as though the patient were taking daily some noxious drug which was discontinued for a time and later resumed. To my mind this explains the sophistry "once a sinus always a sinus" which the laity now sententiously quote. Unfortunately it comes too near the truth, which is my one excuse for this diatribe.

I spend sleepless nights thinking about the physicians of old contemplating arteries and the spurting of blood for centuries before they sensed the secret of the circulation. Fifteen hundred years elapsed before curiosity supplanted reverence for authority and amended the quaint physiology of Galen. I realize what remains to be done for sinuses, and pray that no such centuries will pass before some scientific light is thrown upon these dark cavities which lie above and beside and behind—not to say under—our very noses.

ARTHUR C. DEAN, M.D., F.A.C.S.

**BRAIN ABSCESS FROM THE STANDPOINT OF THE OTOLARYNGOLOGIST:** Wells P. Eagleton (Trans. Amer. Acad. Ophth. and Otolaryngol., Page 64). There is a direct relationship between the intermedullary blood supply and the meninges, as every cerebral vessel is surrounded by a prolongation of the pia arachnoid to form a perivascular space. This makes for an easy route of infection for the formation of brain abscess. Added to this, all the veins within the dura have no outer coat; the walls are simply a layer of endothelial cells. The place of the outer coat, the adventitial coat of the extra-dural veins, is formed by the perivascular space prolongation. In this way venous channels and perivascular spaces are the chief routes of infection in brain abscess, originating from a retrograde thrombophlebitis or a perivascular space invasion. A chill differentiates between these two.

Infarcts occur frequently and many are not recognized as patients recover if the vascular occluding nidus is not infected or when the infection is overcome by the protective reaction of the surrounding arachnoid. Some of these cases cause a suppurative meningitis, and others remain quiet for a long time, and then develop an abscess.

Subdural space abscesses occur frequently, especially

over the frontal lobe, making up about 25 per cent of these cases. They are easily missed if exploration takes place through too small an opening. In the temporo-sphenoidal lobe they are uncommon, but are fairly frequent over the tentorium, under the occipital lobe. All cases of infection through the ductus endolymphaticus are in reality intradural abscesses, which are apt to become subdural space collections. If these are diagnosed early and operated upon, a high percentage of recoveries should be obtained. This form of abscess is apt to result when the superior semi-circular canal has been eroded or following a mastoidectomy, during which there has been injury to the dura. All these cases require a large dural incision.

*Aids to Diagnosis in Brain Abscess.*—1. Careful notes should be made, in doing every mastoid operation, of any abnormalities, for, later, if any intracranial involvement occurs, the focus and its means of spreading anatomically may be understood.

2. If the labyrinth has recently ceased to function the path of infection is likely through it, and has entered the dura through the internal auditory meatus.

3. A patient with a suppurating ear, who vomits without any manifest reason, is experiencing some sort of dural involvement.

4. Routine visual fields should be taken daily, as they may vary greatly. They can only be taken early, when the patient is able to cooperate.

5. The value of nystagmus. In intracranial lesions, one should forget much that has been taught, as to the localizing value of the direction of the nystagmus. A few points are of much value as: (a) a vertical nystagmus either spontaneous or induced suggests a brain stem involvement, (b) a changing spontaneous nystagmus suggests a retro-labyrinthine involvement, (c) a vertical diplopia associated with or followed by a spontaneous nystagmus suggests a deep, mid-brain collection in the anterior segment of the posterior fossa.

Do not do a spinal puncture in any case of abscess suspected to be in either the posterior fossa or any part of the mid-brain cone.

Do not administer ether when unnecessary.

*Operative Results.*—There has been on appreciable improvement in results in cases of temporo-sphenoid abscess. The results in cerebellar abscess have improved probably due to the increased area of bony decompression as done at present. In cases of intradural suppuration of the frontal region, there has been a marked improvement.

L. G. FLANAGAN, M.D.

**APPENDICITIS FOLLOWING TONSILLECTOMY:** H. C. Ballenger (Arch. of Otolaryn., July, 1930, p. 67). Appendicitis following tonsillectomy is apparently not common, judging from the literature, as a careful search failed to reveal any cases reported. That such a relationship may exist is probable, for during recent years it has become increasingly evident that appendicitis or peritonitis may follow acute or chronic tonsillitis. In 1916 Anderson reemphasized the apparent relationship between infection of the upper respiratory tract and that of the appendix. Such a

relationship is suggested by the similar lymphoid tissue in the two structures and by the frequently noted incidence of appendicitis during an epidemic of throat infections.

Evans reported eight times as many cases of appendicitis during the time of an epidemic as when there was no epidemic. He found an infection of the upper respiratory tract in 86 per cent of his cases of appendicitis.

Nearly all observers are convinced that this relationship exists. However, the method by which the transmission of the infection from the throat to the appendix occurs is not so clear; whether the bacteria are carried by the alimentary canal, the lymph system or the blood stream is still a matter of question. Possibly all three channels are used at times.

That the infection may be transmitted by way of the alimentary tract was demonstrated by Chastenot, who obtained a subsequent appendicitis in rabbits by feeding them with pathogenic bacteria. In many cases the infection is transmitted by way of the blood stream. Poynton and Payne reported a case in which they seem to prove almost conclusively that a cause of appendicitis may be a streptococcal invasion through the blood stream from follicular tonsillitis.

The removal of the tonsils and adenoid may possibly be a factor in producing or inciting appendicitis in view of the generally accepted opinion that appendicitis is frequently a result of acute or chronic tonsillitis.

GERALD M. KOEFCHE, M.D.

## GYNECOLOGY AND OBSTETRICS

**EXTEMPORANEOUS EVACUATION OF THE UTERUS UNDER SPINAL ANESTHESIA:** Paul Delmas (Bul. Soc. Gynec. et Obstet., April, 1928, p. 413). The author describes his method of emptying the uterus at an appointed time, without operative or accidental laceration of soft parts.

He believes that spinal anesthesia: (1) prevents contracture or tetanic contraction of the uterus; (2) does not interfere with normal uterine contractions; in fact, that these are actually stimulated.

He explains that the posterior nerve roots are impregnated with the anesthetic, thus breaking the reflex arc and forming a physiologic block to the conduction of painful stimuli from the genital tract. The intrinsic nerve supply is not affected, so normal contractions take place with no inhibition from the central nerve system.

He uses an adequate dose of anesthetic dissolved in cerebrospinal fluid. Dilatation is rapidly accomplished manually, and either forceps or version selected on basis of obstetrical indications. The method was used in about 5 per cent of the cases in his institution and results were uniformly satisfactory. The third stage was usually physiological. Uterine retraction was uniformly spontaneous and adequate.

As contra-indications he recognizes: Operative or traumatic scars of the cervix; inflammatory or cauterized cicatrix; malignant disease of the cervix; tetany or contracture of the uterus or cervix.

He has used the method for the following conditions: To induce labor prematurely in case of contracted pelvis, or for at term hydramnios or prolonged pregnancy; toxemia or eclampsia; premature rupture of membranes; placenta previa; during labor in case of undue delay.

A. L. McDONALD, M.D.

**ERGOTISMUS GANGRENOSUS:** Philip Oginz (Amer. Jour. Obstet. and Gynec., Vol. XIX, No. 5). Serious cases of ergot gangrene are rarely reported. The author furnishes details concerning a patient who received a single dose of fluid extract of ergot following labor. Then, because of sepsis, she was given "Gynergen" by hypo every four hours over a period of ten days. Numbness and tingling of the feet and limbs suggested a diagnosis of saddle thrombus of the common iliac, and surgical intervention was seriously considered. Finally ergot poisoning was diagnosed and the drug discontinued. The condition cleared but only with the loss of all toes of the right foot. Idiosyncrasy to ergot should always be considered and long continued medication with ergot avoided.

A. L. McDONALD, M.D.

**A TEST OF LABOR:** John M. Lafferty (Amer. Jour. Obstet. and Gynec., Vol. XIX, No. 5). The author adopted the test described by Tweedy, which includes: A record of the maternal temperature and pulse, and of the fetal pulse every two hours. A rise of the maternal pulse or temperature above 100 indicates interference on behalf of the mother.

A fetal pulse over 160 or under 120, recorded at three successive counts at one minute intervals, requires interference for fetal distress.

The findings of this test were applied to a series of 822 labors with operative interference in 14.7 per cent. The author feels that the test is a reliable guide, inspires confidence during slow labors, and rarely fails to warn of danger in time for intervention. In his experience it has prevented many unnecessary operative deliveries, and has often furnished the only indication of fetal distress.

A. L. McDONALD, M.D.

## PEDIATRICS

**POLIOMYELITIS:** George A. Campbell, M.B., and Samuel Mirsky, M.D., Ottawa, Ontario (Arch. of Ped., September, 1930, Vol. XLVII, No. 9). In 1913, Flexner and Noguchi isolated the etiological factor and demonstrated it to be a filter-passing virus and not a bacterium.

Sixty per cent of the cases occur in males. Sixty per cent of the cases are under five years of age, and 95 per cent under ten years in recent epidemics. A second attack is unknown. The period of greatest infectiousness is during the first three or four days of the acute disease.

Three types of cases are recognized:

1. The abortive type.
2. Dromedary type.



3. The acute type, in which the nervous system becomes involved while the general infection is at its acute stage.

Spinal fluid examination is usually helpful in the diagnosis, but renders no aid in differentiating poliomyelitis from encephalitis.

Cells: 50 to 2,000—average 150 to 300. The cerebrospinal fluid is normal in the abortive case and during the first febrile disturbance of the dromedary type. There is usually a leukocytosis of 15,000 to 30,000.

The use of convalescent serum is based on two conclusive experiments of Flexner and his associates, which demonstrate that the potent virus of poliomyelitis is rendered innocuous when mixed with convalescent serum, and that administration of the serum, as late as 24 hours after the monkey has been inoculated with the virus, will prevent the development of paralysis.

The importance of diagnosis in the pre-paralytic stage is emphasized because the intramuscular exhibition of convalescent serum at this stage seems to prevent paralysis.

R. N. ANDREWS, M.D.

**ACUTE OBSTRUCTIVE LARYNGITIS:** William L. Bradford, M.D., and Alice D. Leahy, B.S., Rochester, N. Y. (*Am. Jour. of Dis. of Children*, Volume 40, Number 2). While bacillus diphtheriae is the most common cause of this condition, there is no doubt that many cases are diagnosed as laryngeal diphtheria which are actually due to some other organism.

The clinical manifestations of diphtheritic and of nondiphtheritic laryngitis are so similar that the actual diagnosis frequently depends on the results of bacteriologic cultures.

The chief symptoms and the number of persons manifesting them were as follows: diphtheritic—difficult breathing, thirty-three; cough, twenty-two; fever, thirteen; hoarseness, fourteen; cold, fifteen; croup, eleven; sore throat, eleven; restlessness, six; vomiting, eight; nondiphtheritic—difficult breathing, twenty-five; cough, eighteen; croup, seventeen; fever, seventeen; sore throat, seven; cold, six; restlessness, four; vomiting, nine.

Stridor, retraction of the chest with increased respiratory rate, cyanosis and the presence of a membrane were the outstanding signs among the diphtheritic group.

Ten of eleven fatal cases of diphtheria and six of seven non-diphtheritic patients were examined anatomically. In the first group, typical diphtheritic membranes were demonstrated, with the recovery of *Bacillus diphtheriae* in culture in each case. Secondary lobular pneumonia was present in each case. None showed definite myocarditis.

In the nondiphtheritic cases, postmortem examination revealed edema, injection and granulation of the laryngeal and tracheal mucous membranes. No definite membranes were found, but in all cases considerable mucoid exudate was present in the bronchi. Each case presented definite lobular pneumonia. In this group of cases, cultures from the trachea and lungs were negative for *Bacillus diphtheriae*.

The evidence in a study of this group of cases strongly suggests that they were severe types of acute catarrhal laryngitis rather than hemolytic streptococcal infections. In this group of cases the predominating organism found by poured blood-agar plate cultures from the larynx was a green-producing streptococcus. Hemolytic streptococci were insignificant in this series of cases. From the bacteriologic study of this group of cases, it is suggested that green-producing cocci may be of etiologic significance in certain types of acute obstructive laryngitis simulating laryngeal diphtheria.

R. N. ANDREWS, M.D.

**THE DIAGNOSTIC VALUE OF SODIUM FLUORESCIN IN EPIDEMIC CEREBROSPINAL MENINGITIS:** Barnet E. Bonar, M.D., Salt Lake City, and Lyle G. Bailey, M.D., Millwood, Wash. (*Amer. Jour. of Dis. of Children*, Sept., 1930, Volume 40, Number 3). Sodium fluorescein is a dyestuff that has been used to determine the permeability of the meningeal barrier in health and in disease. Jervell demonstrated that the presence of sodium fluorescein in the spinal fluid within three hours after oral administration was indicative of meningitis, and that inability to detect the presence of sodium fluorescein ruled out the disease.

In 19 cases out of 21 of epidemic cerebrospinal meningitis, the sodium fluorescein test performed early in the course of the disease or before cure was established gave positive results. The absence of positive results in the globulin and sodium fluorescein tests indicates that the meningeal infection was of too short a duration and too slight a degree to give changes of the spinal fluid in the two cases. Both cases died early.

The fact that the concentration of sodium fluorescein was slight in some cases, whereas after treatment the reactions became stronger, suggested the possibility of irritation by the serotherapy increasing the permeability of the meninges.

Ordinarily, the finding of blood in the spinal fluid at puncture makes the fluid nearly valueless for diagnosis. Sodium fluorescein is nonpoisonous, and should not be confused with uranium, which is destructive to the tissue of the kidneys especially.

The test is of value in the differentiation of epidemic cerebrospinal meningitis from other diseases in which sometimes there are manifestation of meningeal irritation, such as pneumonia, erysipelas, spasmophilia, encephalitis, tumor of the brain and tetanus. The presence of small amounts of blood does not invalidate the test, which makes it especially valuable in the diagnosis of meningitis.

R. N. ANDREWS, M.D.

**THE CHILD'S HEART IN HEALTH AND DISEASE:** Ronald L. Hamilton, M.D., Sayre, Pa. (*Arch. of Ped.*, Vol. XLVII, No. 7, July, 1930.) A survey of the vital statistics collected during the past decade has demonstrated to us that heart disease is playing the major role in our death rate.

Should we, up to six weeks, examine the infant's

heart we would find a definite right auricular enlargement, which is physiologically normal. Murmur and thrills may be apparent the first few weeks of life, but these should soon disappear.

All children born with cyanosis are not necessarily congenital heart abnormalities, as enlarged thymus, atelectasis of lungs, cerebral hemorrhage, or sepsis may cause the same. The cyanotic group are principally those of pulmonary stenosis, or pulmonary stenosis and atresia. It is extremely important that we diagnose correctly congenital heart disease from organic heart disease.

Patent foramen ovale: Here we should expect little, if any, diminished life expectancy. Ventricular defects are not incompatible with long life, even though they may be complicated with a patent ductus arteriosus. Atresia of pulmonary artery demands a guarded prognosis.

Treatment consists of care in the avoidance of infection, and the mapping out of a good hygienic regime to be followed by the patient. We should be more optimistic in our outlook and remember that the significant aspect of the case is the ability of the heart to work. Even extreme cyanosis should not necessarily influence us to take a too pessimistic view.

Most important are the groups with acute rheumatic fever, chorea, tonsillitis, and those of growing pains. The earliest signs of heart involvement resulting from the above diseases are as follows:

- a. A slowing of the heart manifesting a delayed conduction time from auricle to ventricle.
- b. An excessive and persistent tachycardia found early.
- c. A dropped beat (not a premature beat).
- d. A complete transient heart block.
- e. Enlargement of the heart.
- f. Development of a heart murmur.
- g. Pericardial effusion, and at times friction rubs.

Acute rheumatic fever and allied diseases, manifested at times only by growing pains, must be appreciated by the physician as being of significance. Investigators have recently proven that infection may remain in the body, mildly active or in a quiescent stage, from three to five years. A child developing either of these diseases should be kept under the watchful eye of a physician for at least five years, even though convalescence appears to have been uneventful and complete. Good common sense is the greatest asset of the physician in this estimation of activity. Salicylates by mouth (and if gastro-intestinal disturbance, then by rectum) are probably the most important of all medicinal methods of treatment.

Acute infectious disease means potential heart disease. Acute rheumatic fever always means heart disease. Therefore, in infectious diseases, place the heart in its best possible state to resist infection. Never overstimulate a heart that is functioning to capacity—for whipping a tired horse leads but to disaster.

R. N. ANDREWS, M.D.

## NEW AND NON-OFFICIAL REMEDIES

The Council on Pharmacy has accepted the following articles:

ACES LABORATORY, INC.

Mercurochrome Suppositories-Aces

CUTTER LABORATORY.

Diphtheria Toxoid-Cutter, 45 c.c. vial

HOFFMANN-LAROCHE, INC.

Synthetic Thyroxine

Ampuls Synthetic Thyroxine-Roche, 1.1 c.c.

Solution Synthetic Thyroxine-Roche

Tablets Synthetic Thyroxine-Roche, 1 mg.

INTERNATIONAL VITAMIN CORPORATION

I. V. C. Vitamin Concentrate of Cod Liver Oil

ELI LILLY & Co.

Amytal

Pulvules Sodium Amytal, 3 grains

Old Tuberculin, Human Strain, Concentrated, 2 vial packages

McKESSON & ROBBINS, INC.

McKesson's Vitamin Concentrate of Cod Liver Oil

E. S. MILLER LABORATORIES, INC.

Ampoule Sterile Solution Dextrose, U.S.P., 5 Gm., 10 c.c.

Ampoule Sterile Solution Dextrose, U.S.P., 10 Gm., 20 c.c.

NATIONAL DRUG Co.

Antimeningococcic Serum

PARKE, DAVIS & Co.

Gas-Gangrene Antitoxin (Combined) Refined and Concentrated

Soluble Gelatin Capsules, Parke, Davis & Company's Standardized Cod Liver Oil.

PLANT PRODUCTS Co.

Plant's Magnesia Wafers

G. D. SEARLE & Co.

Chiniofon-Searle

Tablets Chiniofon-Searle, 0.25 Gm. (4 gr.)

C. M. SORENSON Co., INC.

Inhalant Chlorotone Creosote and Eucalyptol-Sorensen

SPICER & Co.

Tartro-Quiniobine

Tartro-Quiniobine Ampules, 2 c.c.

WHITE LABORATORIES, INC.

White's Cod Liver Oil Concentrate

WINTHROP CHEMICAL Co.

Ampules Emulsion Mesurol, 20 per cent, 1 c.c.

Mesurol

Theocin

Tablets Theocin, 1½ grains

NONPROPRIETARY ARTICLES

Quinine Bismuth Iodide

Sodium Potassium Bismuthyl Tartrate

The following articles have been exempted and included with the List of Exempted Medicinal Articles (New and Non-official Remedies, 1930, p. 477):

H. K. MULFORD Co.

Pollen Extracts Diagnostic-Mulford

C. M. SORENSEN Co., Inc.

Inhalant Pine Camphor and Eucalyptol-Sorensen

#### TRUTH ABOUT MEDICINES

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Non-official Remedies:

**Alphanaphthol.**—The actions of alphanaphthol resemble those of betanaphthol. The literature is rather contradictory and unsatisfactory as to the relative toxicity, but it is probably of a similar order. Alphanaphthol is employed locally as an antiseptic and germicide; it is not generally used internally.

**Alpha Naphco.**—Compound Solution of Alphanaphthol. Alpha Naphco contains alphanaphthol 10 Gm., glycerin 32 Gm., soft soap 23.8 Gm., water to make 100 Gm. When tested against *B. typhosus* by the U. S. Hygienic Laboratory method, alphanaphco has a phenol coefficient of 1.46. Carel Laboratories, Redondo, California.

**Pyridium.**—Phenylazo-2-6-diamino-pyridine monohydrochloride. The monohydrochloride of an azo dye of the pyridine series, phenylazo diamino-pyridine. Pyridium has marked penetrating power and is non-toxic and non-irritant in therapeutic dosage. It is rapidly eliminated through the urinary tract. It is bactericidal in aqueous solution against staphylococcus, streptococcus, gonococcus, *B. coli* and even *B. diptheriae*. It is proposed for use in gonorrheal infections, urinary diseases, and in colon bacillus and mixed infections. The drug is supplied in the form of Aqueous Solution of Pyridium, 1 per cent; Pyridium Ointment, 10 per cent; and Pyridium Tablets, 0.1 Gm. Merck & Co., Inc., New York.

**Pollen Antigens-National.**—Liquids obtained by extracting the dried pollen of plants with a 0.5 per cent sodium chloride solution containing sodium bicarbonate and phenol. For a statement of actions and uses, see Allergic Protein Preparations, New and Non-official Remedies, 1930, p. 23. Pollen Antigens-National are marketed in packages of one 5 c.c. vial containing respectively 50, 100 and 250 units per c.c. The following products have been accepted: Ragweed Pollen Antigen-National and Timothy Pollen Antigen-National National Drug Co., Philadelphia. (Jour. A. M. A., July 5, 1930, p. 35.)

**Mead's 5 D Cod Liver Oil with Viosterol.**—A brand of cod liver oil with viosterol 5 D (N. N. R.). For a discussion of the actions and uses of cod liver oil with viosterol 5 D, see New and Non-official Remedies 1930, p. 257. Mead Johnson & Co., Evansville, Indiana.

**Siomine.**—Hexamethylenetetramine tetraiodide. Siomine contains 78.5 per cent of iodine. Siomine is decomposed in the intestine with formation of hexamethylenetetramine and iodide, the rate of absorption and excretion being essentially the same as that

of inorganic iodides. It therefore produces the effects of ordinary iodides, from which it differs only in that it can be administered in solid form. No therapeutic claims are made for the hexamethylenetetramine component of siomine, this being present only to render the substance insoluble. The dosage is the same as that of potassium iodide. Siomine is supplied in the form of capsules containing respectively  $\frac{1}{2}$  grain, 1 grain, 2 grains, and 5 grains. Pitmanmoore Co., Indianapolis.

**Ephedrine Nasal Jelly-Maltbie.**—It is composed of ephedrine sulphate-N. N. R. 1 per cent, menthol 0.25 per cent and sodium benzoate 0.5 per cent in a glycerite of tragacanth base. For a discussion of the actions and uses of ephedrine sulphate, see New and Non-official Remedies, 1930, p. 167. Maltbie Chemical Co., Newark, New Jersey.

**Ephedrine Hydrochloride-P. D. & Co.**—A brand of ephedrine hydrochloride-N. N. A. For a discussion of the actions and uses of ephedrine hydrochloride see New and Non-official Remedies, 1930, p. 167. Ephedrine hydrochloride-P. D. & Co. is supplied in the form of capsules containing respectively  $\frac{3}{8}$  grain and  $\frac{1}{4}$  grain. Parke, Davis & Co., Detroit.

**Elixir of Pyramidon.**—Each 4 c.c. (1 fluidrachm) contains pyramidon (New and Non-official Remedies, 1930, p. 314) 0.162 Gm. (2½ grains) in a menstruum containing alcohol, 20 per cent. H. A. Metz Laboratories, Inc., New York.

**Pyramidon Tablets 1 1/2 grains.**—Each tablet contains pyramidon (New and Non-official Remedies, 1930, p. 314) 1½ grains. H. A. Metz Laboratories, Inc., New York.

**Thio-Bismol.**—Sodium Bismuth thioglycolate. A salt formed by the interaction of sodium thioglycolate and bismuth hydroxide containing approximately 38 per cent of bismuth. Thio-bismol is proposed as a means of obtaining the systemic effects of bismuth in the treatment of syphilis (Bismuth Compounds, New and Non-official Remedies, 1930, p. 94); it is a water-soluble compound, readily absorbable, and produces relatively little local injury. The product is supplied in the form of ampules containing 0.2 gm. of thio-bismol. Parke, Davis & Co., Detroit. (Jour. A. M. A., July 19, 1930, p. 200.)

#### FOODS

The following products have been accepted by the Committee on Foods of the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in Accepted Foods:

**Heinz Rice Flakes Prepared with Pure Rice Cellulose (H. J. Heinz Co., Pittsburgh).**—A flaked rice containing added rice cellulose, yeast, salt and milk sugar. Milled rice, rice cellulose (7 per cent of weight of rice), yeast (7 per cent), table salt (2.75 per cent), and milk sugar (0.5 per cent) are cooked, dried, flaked, toasted, cooled and packed. The product is a breakfast cereal containing indigestible cellulose that is claimed to be less irritant than wheat bran. It is proposed for use in an anticonstipative diet.

**Ry-Krisp (Ralston Purina Co., St. Louis).**—A whole rye grain wafer flavored with salt. Ry-Krisp may be

used in cases of wheat allergy. The wafers encourage thorough chewing.

**Merrell-Soule Powdered Skim Milk** (*The Borden Co., New York*).—A standard, uniform, practically fat-free, powdered skim milk. It contains fat 1.0 per cent, protein 36.5 per cent, lactose 51.8 per cent, mineral matter 7.9 per cent, moisture 2.5 per cent. The product is offered as a near approach to a fat-free milk.

**Curtice Brothers Certified Nursery Foods** (*Curtice Bros. Co., Rochester, N. Y.*).—Sieved spinach, carrots and tomato, and vegetable purée. The water content approximates that of the raw vegetables. These foods are stated by the manufacturer to be especially prepared for babies and young children. The manufacturer guarantees a declared minimum number of units of Vitamins A, B and C. This information is declared on the label of the cans.

**Alp Rose Canned Foods** (*John Sexton & Co., Chicago*).—These are canned fruits and vegetables, packed in water without added sugar or salt, and intended for use in restricted diets. The label declares the average composition for available carbohydrates, protein and fat.

**Van Camp's Puréed Fruits and Vegetables** (*Van Camp Packing Co., Indianapolis*).—These include purées of peas, spinach, tomatoes, prunes, apricots, carrots with puréed tomatoes and beef broth, and mixed vegetables with beef broth. These foods are designed by the manufacturer to influence the greater use of certain vegetables of good nutritional value. They are intended to provide them in smooth diet form and are chosen for their vitamin values. (*Jour. A. M. A., August 16, 1930, p. 485.*)

**Sun Wheat Biscuits** (*Canada Biscuit Co., Ltd., London, Ont.*).—A wheat biscuit with unusual vitamin and calcium content.

**Sunwheats** (*The Sawyer Biscuit Co., Chicago*).—Sunwheats is the brand name for Sun Wheat Biscuits manufactured for distribution in the United States.

**Kiddie Kanned Vegetables, Fruits and Cereals** (*Kiddie Kanned Foods, Inc., Seattle, Wash.*).—Canned cooked and sieved vegetable soup, oat porridge, wheat porridge, spinach, tomatoes, carrots, apples and peaches. They contain no added salt or sugar. To prepare these products the vegetables and fruits are washed, cooked under pressure to soften for sieving. The hot sieved foods are packed in cans, sealed and processed. Crushed oats and wheat are cooked under pressure, sieved, packed hot, and processed.

**Horlick's Malted Milk Lunch Tablets** (*Plain and Chocolate Flavored*) (*Horlick's Malted Milk Corporation, Racine, Wis.*).—These are Horlick's Malted Milk, plain and chocolate flavored, compressed into tablets. (*Jour. A. M. A., September 20, 1930, p. 865.*)

**Horlick's Malted Milk** (*Horlick's Malted Milk Corporation, Racine, Wis.*).—The product is a dried milk and extract of malted barley and wheat. Horlick's Malted Milk is claimed to be a nutritious food and when taken hot before retiring to be helpful for inducing sleep, and to be valuable in diets for undernourished, nervous patients, those afflicted with wasting diseases, invalids and convalescents.

**Horlick's Sweet Chocolate Flavor Malted Milk** (*Horlick's Malted Milk Corporation, Racine, Wis.*).—The product is Horlick's Malted Milk flavored with cocoa. Its composition is essentially that of Horlick's Malted Milk.

**Grape-Nuts** (*General Foods Corporation, New York; Postum Co., Inc., Battle Creek, Mich.*).—A breakfast cereal of whole wheat and malted barley. The manufacturer offers Grape-Nuts as an energy food providing proteins, the mineral elements of wheat and barley, and Vitamin B. (*Jour. A. M. A., August 23, 1930, p. 595.*)

#### ACCEPTED DEVICES FOR PHYSICAL THERAPY

The following have been accepted by the Council on Physical Therapy of the American Medical Association for inclusion in its list of accepted devices for physical therapy:

**Austin's Irrigators**.—Austin's Irrigators (*W. D. Peattie, Inc., Cleveland, Ohio*) are designed for "dilating the sphincter muscles" and "for continuous irrigations," particularly in "the use of extreme temperatures in (irrigating) liquids." It is claimed for the apparatus (1) that complete dilation and thorough cleansing is accomplished; (2) that the vaginal types permit long uninterrupted douching; (3) that the rectal types permit long uninterrupted irrigation; (4) that they are made of material which permits the use of irrigating liquids of high or low temperature; (5) that the apparatus may be taken apart and sterilized thoroughly; (6) that it is easily tolerated by the patient; (7) that any soluble antiseptic may be used; and (8) that the irrigators or tips can be made a part of any irrigating apparatus. The Council on Physical Therapy believes that these claims are reasonable and not unwarranted. (*Jour. A. M. A., August 2, 1930, p. 343.*)

**Sorensen Therapeutic Inhaler No. 922**.—The Sorensen Therapeutic Inhaler No. 922 (*C. M. Sorensen Co., Inc., Long Island City, N. Y.*) is stated to be an electrical instrument giving warm, dry air for the vaporization of inhalants. The device is constructed to heat air in sufficient volume to permit of deep and continued breathing direct from the applicators, thus providing the mucosa with a continuous supply of warm air or of warm medicated vapor. It is designed to operate on a 100 to 125 volts, alternating or direct current, and its power consumption is less than 15 watts.

**Sorensen Therapeutic Heater No. 921**.—The Sorensen Therapeutic Heater No. 921 (*C. M. Sorensen Co., Inc., Long Island City, N. Y.*) is similar to the Sorensen Therapeutic Inhaler. It is different in that the cold air, instead of being drawn through a heating chamber, is forced through by some type of air compressor. It is claimed to be of value in the treatment of those diseases of the middle ear where the application of warm, dry air, or warm medicated vapor, is indicated. (*Jour. A. M. A., August 9, 1930, p. 413.*)

**Sunlit Ultraviolet Glass**.—The window glass known as "Sunlit" (*Semon Bache & Co., New York*) is stated to be a glass that transmits the biologic ultraviolet rays of the sun. According to a test conducted by the Bureau of Standards this glass does transmit an appre-



chable percentage of the solar rays which have been shown to have antirachitic properties. (Jour. A. M. A., August 16, 1930, p. 484.)

**Maltese X-ray Lead Glass.**—Maltese X-ray Lead Glass (Semon Bache & Co., New York) is a lead glass designed for x-ray protective shields. Measurements of the protective qualities of several samples were made by the Bureau of Standards and were satisfactory. (Jour. A. M. A., September 20, 1930, p. 865.)

**The Davis Inhalator.**—The Davis Inhalator (Bulard-Davis, Inc., New York) is a portable apparatus designed to assist physicians in the administration of oxygen or a mixture of oxygen and 5 per cent carbon dioxide in resuscitation in various forms of asphyxia. Compressed gases are contained in tanks and by a reducing valve may be delivered at the desired pressure through a breathing bag and mask as demanded by artificial or natural breathing of the patient. The apparatus meets the requirements for inhalators of approved standard and incorporates devices which make for flexibility, adaptability and safety. (Jour. A. M. A. July 19, 1930, p. 200.)

**Complex Electro-Cautery and Diagnostic Light (Complex Oscillator Corporation, New York).**—A device for cauterization by means of electrodes which are electrically heated to the desired temperature. The device consists essentially of a transformer, designed to operate on either a 110 or 220 volt, 60 cycle alternating current circuit. The transformer is also tapped at such point as will give the desired voltage for the operation of a diagnostic light.

**"Stoppollen" Air Filter (Davies Air Filter Co., New York).**—A simplified portable filter which delivers dust- and pollen-free air. The apparatus is described as consisting of a cabinet rectangular in shape, which contains the filter screen, a pressure fan and an electric motor, and is so constructed as to fit into any sized window. The cost of operating the device continuously for twenty-four hours is about ten cents. Tests were conducted which demonstrated that the Stoppollen air filter was efficient as a means of keeping a room free from dust and pollens. (Jour. A. M. A., May 31, 1930, p. 1760.)

**Scillaren-B.**—The amorphous component of the natural mixture of the glucosides occurring in squill, *Urginea maritima*. Completely dried scillaren-B contains approximately 99.5 per cent active glucosidal substance. Scillaren-B dried in a high vacuum at 78° C. for fifteen hours loses not more than 5 per cent of its weight. The actions and uses are the same as those of scillaren. It is administered intravenously when immediate action is imperatively indicated. Scillaren-B is marketed in the form of ampules each containing 0.5 mg. (1/130 grain) of scillaren-B. Sandoz Chemical Works, Inc., New York.

**Ampoules Glucose (Dextrose, U.S.P.) Lilly, 50 Gm., 100 c.c.**—Each ampule contains dextrose, U.S.P. (New and Non-official Remedies, 1930, p. 245), 50 Gm.; distilled water to make 100 c.c.; accompanied by an ampule containing 4 c.c. of a buffer solution. Eli Lilly & Co., Indianapolis.

## BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

### BOOKS RECEIVED FOR REVIEW

**MINOR SURGERY AND BANDAGING.** Gwynne Williams, M.S., F.R.C.S., Surgeon, University College Hospital. Twentieth Edition. 445 pages. Illus. Flexible binding, \$3.50. Philadelphia: F. A. Davis Company, 1930.

**HANDBOOK OF ANATOMY.** James K. Young, M.D., F.A.C.S., Late Professor of Orthopedics, Graduate School of Medicine, University of Pennsylvania. Revised by George W. Miller, M.D., F.A.C.S., Associate in Anatomy, Jefferson Medical College. Seventh Revised Edition. 460 pages. Illus. Flexible binding, \$3.75. Philadelphia: F. A. Davis Company, 1930.

**EPISCOPAL HOSPITAL REPORTS.** Volume VI. Edited by John H. Arnett, M.D., of Episcopal Hospital, Philadelphia. 460 pages. Illus. Cloth. Philadelphia: Press of Wm. J. Dornan, 1930.

**TEXTBOOK OF PATHOLOGY.** Edited by E. T. Bell, M.D., Professor of Pathology, University of Minnesota. 627 pages. Illus. Cloth, \$8.00. Philadelphia: Lea & Febiger, 1930.

**ARTERIAL HYPERTENSION.** Edward J. Stieglitz, M.S., M.D., Assistant Clinical Professor of Medicine, Rush Medical College, University of Chicago. 280 pages. Illus. Cloth, \$5.50. New York: Paul B. Hoeber, Inc., 1930.

**OBSTETRICS.** A text-book for the use of students and practitioners. J. Whitridge Williams, Professor of Obstetrics, Johns Hopkins University, Obstetrician-in-chief to the Johns Hopkins Hospital, Baltimore. Sixth edition, revised. 1157 pages. Illus. Cloth, \$10.00. New York: D. Appleton & Company, 1930.

**SELECTED READINGS IN THE HISTORY OF PHYSIOLOGY.** Edited by John Farquhar Fulton, M.D., Sterling Professor of Physiology, Yale University School of Medicine, Baltimore, Md.; Charles C. Thomas, Publisher, 1930. Price \$5.00.

A long need has been filled by Dr. Fulton's book. It is a type of book which seems to become more and more popular, judging from the success of works like E. R. Long's "Selected Readings in Pathology from Hippocrates to Virchow," and John Rurāh's "Pediatrics of the Past."

Dr. Fulton was fortunate in the choice of the arrangement, dividing the entire material into several large chapters according to subjects and arranging each chapter chronologically. Each chapter has a short but good introduction and every chosen part is preceded by a short biography of the author. The language is exquisite and the short but concise biographies are unsurpassed, describing in a few lines not only dry facts as to the life of the respective scientist but giving in brief an idea as to his main works and their effect on the progress of physiological thought. On every page the editor shows himself a scholar; he is most exact in giving the sources and—which increases the value of the book—is quite generous with reference as to authors and subjects. The translations and the use of technical terms are very good and Dr. Fulton can easily

take a chance on "holding himself responsible"; the same is true of the choice of illustrations and the print.

These "selected readings" are of much greater value than the average man is willing to admit before reading them. We have to realize that most of us have never seen the original texts of the most important findings in medicine, partly because they are in some language with which most of us are not acquainted, partly because the sources are rather difficult to secure, even in new editions. Here we have a selection of

readings giving us the epoch-making findings in the progress of physiological knowledge, easy to read and arranged in a form to secure complete understanding.

Although one would like to see one or the other added selection in this book, especially in the chapters containing the physiology of the endocrine glands, it accomplishes its endeavors completely. This is not intended as any adverse criticism of this book—it is a sign of how one feels after reading it—one wants more.

ROBERT ROSENTHAL, M.D.

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